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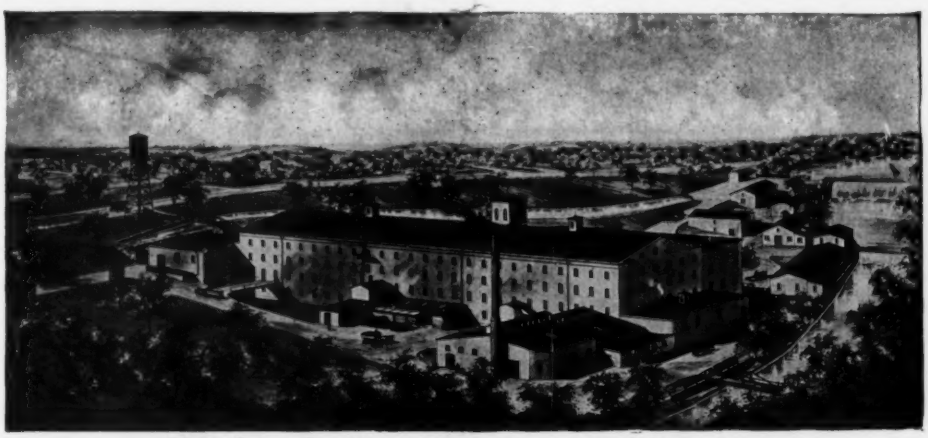
AUGUST 10, 1927



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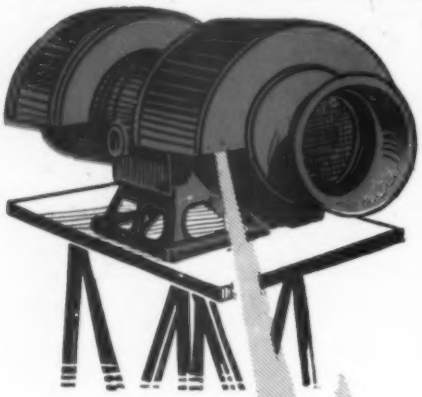

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For Twenty-Five Years, Manufacturers of Fire Alarm Signals Exclusively

"Paid for itself several times~ just during the flood"

HAZARD FIRE DEPARTMENT

HAZARD, KENTUCKY

June 22, 1927.

Seagrave Corporation,
Columbus, Ohio.

Gentlemen:

May I take this means of expressing to you my appreciation of the prompt service rendered on our truck.

At the time we needed your Mr. Fultz, the flood had destroyed all ways of communication with the outside world, and it was only thru the kindness of Captain S.G. Render of the Kentucky Actuarial Bureau, that we were able to get our message to you.

As the flood waters receded, the Seagrave engine followed down the streets, pumping from basements of business houses, and in this way we were able to have the streets clear for traffic at least a week ahead of the time, had we waited for city water, as the water plant was under six feet of water.

Too much praise can not be given the Seagrave Apparatus, for its performance during the flood, and it was heard said several times on the street by bystanders, that the truck had paid for itself several times just during the flood, not counting the countless dollars it has saved from fires.

Should the occasion ever arise, where I can say a good word for the Seagrave Apparatus and the service behind it, you may rest assured I will be very glad to do so, for it's a great feeling to know you are riding a machine that, with usual care and upkeep, will deliver the goods when you need it.

I also want to commend your Mr. Fultz in the efficient manner in which he overhauled our apparatus. During the time he was working on the truck, there was never a time we could not have answered an alarm, with only a few minutes delay and as this is the only apparatus in the City, a great responsibility rests on this machine.

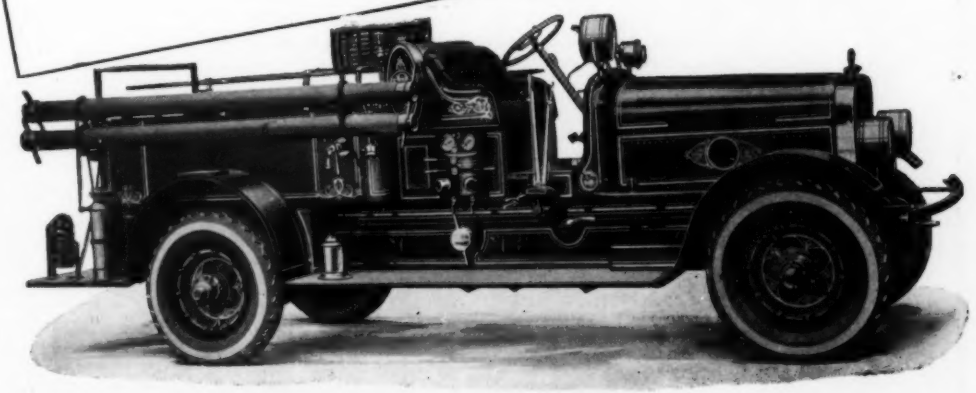
The flood waters ruined everything in the Fire Department Headquarters, but in time we will again be in shape.

Trusting I may some time be able to render service to the Seagrave Apparatus, I beg to remain,

Very truly yours,

W.S. Lipscomb Chief

Time after time, Seagrave apparatus proves its value in fighting man's eternal enemy—fire. This letter is an example of the many other times when Seagrave apparatus goes out of its way to befriend mankind.



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FIRE ENGINEERING

A consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

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Portland or Bust!

OVER the mountains and far away to Portland, Oregon, have gone the fire chiefs from every section of the country who are fortunate enough to be able to attend the big Convention of the International Association of Fire Chiefs.

¶ But, for those who have to miss being in Portland in person, FIRE ENGINEERING will be there to secure a full report of the proceedings, photographs of the delegates and their doings, and all the important news of the meeting. Watch for the next issue!

¶ We are glad to be able to serve our readers in this way, knowing that a full and accurate record of doings in the fire field, wherever and whenever they occur, will be of real value to our good friends, the thousands who use FIRE ENGINEERING to keep up-to-date in their knowledge of the fire-fighting profession. It is a privilege to serve you!

The Publishers

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in Manchester, New Hampshire

WHEN the Fire Department Officials of this progressive New England city received their first Ahrens-Fox Non-Aerial, Tractor Drawn Ladder Truck, they were so well pleased with its many desirable features that they placed an order for another one the very same day.

Other cities throughout the country are also finding this model, pictured above, remarkably efficient and dependable in actual service under all kinds of conditions.

This model was designed by experienced Ahrens-Fox fire apparatus engineers, is constructed of the highest grade materials obtainable, is built by experts with the aid of the most improved machinery in an up-to-date factory.

All in all, we honestly believe this ladder truck to represent the finest piece of apparatus of its type on the market today—and we shall be glad on request to send you complete information.

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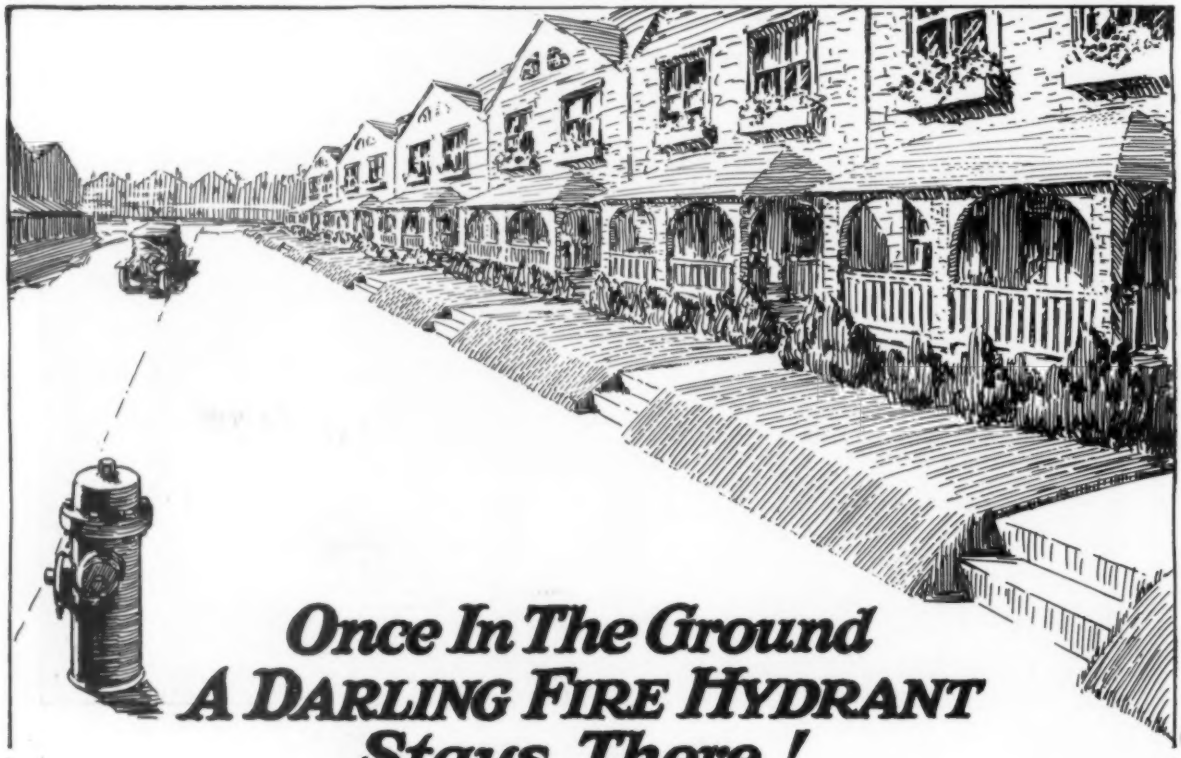

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Not because it doesn't need inspection, because any fire hydrant should be periodically examined. Not because it doesn't sometimes need repacking, because no packing material has ever been discovered that will not eventually wear out.

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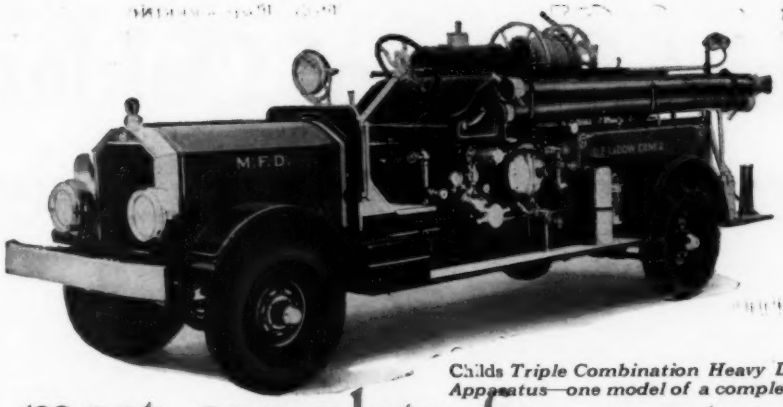

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The most complete fire protection service in America today

WITH 450 Fire Departments now using *Childs* motor apparatus, and over 900 Departments using *Foamite* equipment, the company behind these products holds a position of real leadership in fire protection service. Foamite-Childs engineers are constantly advancing the science of fire control with new or perfected equipment that proves itself in practical service.

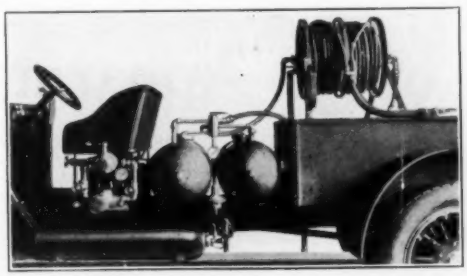
Typical of this steady advance is the new, complete line of *Childs* Heavy Duty Motor Apparatus, one model of which is shown above. And in the development of the foam method of fire-fighting, this company stands alone.

Write for catalogues, or ask to have a representative call.

Foamite-Childs Corporation, 374 Turner Street, Utica, N. Y.—Sales and Engineering Representatives in all leading cities. *Foamite-Childs of Canada, Ltd.*, Toronto, Ont.

—Offering the highest developments of the foam fire-fighting principle

A continuous stream of fire-smothering foam of the highest quality is made possible by this new Foamite Foam Generator. Weighs only 72 lbs. Easy to operate. Connects into any hose line. The quantity of foam is limited only by the reserve supply of dry chemical compound and the supply of water



Foamite 40-gal. Chemical Tanks mounted on a truck in place of the ordinary but less effective soda-acid tanks. Each tank generates about 300 gallons of Firefoam. Available in both double-tank and single-tank units

The Foamite 2½-gal. Splash-Proof Extinguisher. Generates about 20 gallons of Firefoam. Highly effective on both extra-hazardous and ordinary incipient fires

Foamite-Childs Protection

A Complete Engineering Service
Against Fire

Chief Short of Oakland Praises C-A-M Sirens

SAMUEL M. SHORT
CHIEF
FIRE DEPARTMENT

DEPARTMENT OF
PUBLIC HEALTH AND SAFETY
FRANK COLBOURN
COMMISSIONER

CITY OF OAKLAND
CALIFORNIA

C-A-M MANUFACTURING COMPANY,
802 Humboldt Bank Building,
San Francisco, California.

June 9, 1927

Gentlemen:

With further reference to our conversation as to how I, personally, and the members of the Oakland Fire Department liked the C-A-M Siren, wish to state that the C-A-M Siren is more powerful and has been the talk of the Department since being installed, due to the fact that it gives greater volume of sound and clears traffic more effectively than any other type of siren used by this Department.

Yours very truly,

Chief of Department.

P. S. C-A-M Sirens are now included in specifications for new apparatus

Greatest of All Apparatus Sirens

THIS indorsement by Chief Short is typical of what Fire Chiefs everywhere think of C. A. M. sirens. Fire Departments from coast to coast are rapidly equipping all their apparatus with C. A. M. sirens.

Test after test in actual service has proven the superiority of the C. A. M. for fire department use. They are *quality* sirens—sturdily made of the finest material obtainable. Every siren *unconditionally guaranteed.*

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We'll Gladly Send You One on Trial

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A. D. T. Systems Protect.

Every day throughout the land the A. D. T. Fire Alarm Systems Watch silently, unfailingly. They work through the night, when protection is needed the most.

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Dependable

FIRE ENGINEERING

(A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER)

The Journal of the Fire Protection Profession

VOLUME LXXX AUGUST 10, 1927 NUMBER 16

Does It Pay to Train the Fireman?

The Author Replies Emphatically in the Affirmative—Present Rookies May Become Future Chiefs—Need of Knowledge by Officers

By ASSISTANT CHIEF JAMES E. GRANGER,
Fire Department, Cleveland, Ohio *

CHIEF GRANGER, who is known as a practical and efficient officer, here unqualifiedly advocates the proper training of the fireman, so that, if made of the proper material, the private may eventually be worked into an up-to-date and efficient officer:

The question of education along the lines of modern methods of fire control for the officers and members of fire departments has long been the subject for many varied discussions. The progress of our commercial and industrial life, our building construction and in fact every line of progress has presented to our profession ever new and increasing problems that require more than the hit and miss methods that have been followed in the past.

One chief officer of national reputation and one for whom I have the highest regard for his unusual natural ability as a fire general was credited with the statement a few years ago, before his retirement, that the fellow with a strong back made a more desirable man for the service than the fellow of higher mentality. I believe you will agree with my contention that the fellow possessing both the strong back and the higher mentality which enables him to better understand the requirements of the service is far superior to the fellow who lacks either quality.

The Greater the Knowledge, the Greater the Ability

Knowledge never disqualifies a man for anything and the more knowledge he absorbs along the line of his particular vocation the greater his ability to render not only intelligent but more efficient service.

I do not refer to the higher or technical education and intend no reflection on the man who has not had the opportunities of such education. What I want to express is the necessity for deeper study of cause and effect of the numerous features involving fire control, the necessity of the standardization of methods, tools and equipment, and universal co-operation.

Ventilation as an Instance

We will take for example the subject of Ventilation. It is only a few years back when chief officers ridiculed the suggestion of ventilation, as it is successfully practiced today. If a fire occurred on the third floor of a 5 or 6 story building it would have been deemed the height of folly to open up scuttle covers, skylights, penthouses, etc. The contention was that such openings created a draught that would cause the fire to spread or extend. The actual fact was not evident that the heat generated by the fire below was rising and accumulating at the highest point, that it was constantly increasing in intensity and that when the temperature in the area of this accumulated heat reached the particular ignition point of the contents they would burst into flame without communication from the fire below. It was not fully realized that this same accumulation of heat was a potent factor involving that dreaded menace known to us as "back draught."

Both Experience and Scientific Study Required

These are not theories, they are facts as you know them and have seen them. Ventilation by roof openings, releases pent up heat and gases in the natural direction—upward—for the reason of their tendency to rise, being lighter than the atmosphere. The heat and gases thus confined create an upward pressure and it is not uncommon to see a scuttle cover blown several feet in the air by this pressure or expansive force upon release of the fastening. This upward rush of escaping heat and gases draws the smoke up after it and relieves the building of the smoke. This enables men to advance to the seat of the fire and eliminates back draught. These principles of ventilation were not obtained from practical experiences alone, it required scientific study.

* From a paper read before the annual convention of the Ohio Fire Chiefs' Association at Mansfield.

> "KNOWLEDGE never disqualifies a man for anything and the more knowledge he absorbs along the line of his particular vocation the greater his ability to render not only intelligent but more efficient service."

It has been said with regards to hydraulics that fires were not extinguished with figures. This may be true in a sense but it has been demonstrated that the so-called figures have aided materially in not only extinguishing fires but in the reduction of water loss and fire damage, as well as reducing the possibility of conflagration. It is necessary to know what constitutes an effective stream for each of many conditions. It is necessary to know what pressure is required to elevate water to any given height. It is necessary to know the effect in friction loss on various lengths and sizes of hose under required pressures. All this knowledge is required to determine the pressure required at the engine to produce the effective stream.

Officers Must Have Knowledge to Direct Men

The size of nozzle tips is also a factor to be considered. Who should possess this knowledge and how are they to obtain it? Surely it is not the engine or motor operator. He has no means of knowing your position at a fire; whether you are working from the ground, from a ladder, a fire escape or a roof. It is the company officers and chief officers, so that they may intelligently direct the engineer as to the engine pressure to be maintained. The only way to acquire this intelligence is through the study of simplified practical hydraulics. There is no need for technical education. All the necessary information is within the reach of every one with an elementary knowledge of mathematics. It is an interesting study and by its adoption, together with study along other practical lines, you are going to solve another problem that has been the source of many difficulties and that is the occupation of idle time of subordinates. Idle hands and unemployed minds breeds mischief and dissension. This applies particularly to the smaller municipalities where there is not much fire duty to perform as well as the outlying districts in the larger cities. This demonstrates one of the advantages of education and training.

Necessity for Building Construction Knowledge

The practice of requiring a knowledge of building construction and nature of the contents of buildings has in some instances been condemned. This requirement does not mean building construction from an engineering standpoint. It means rather the location of stairways, elevators and other vertical openings, skylights, scuttles, penthouses, fire escapes, fire doors, sprinkler valves, drains, and standpipes. A knowledge of these will enable you to advance to the seat of a fire and operate with greater safety, more intelligently, more quickly and efficiently. The only method by which you can accomplish this is by inspection and a study of conditions.

A knowledge of the nature, weight and qauntity of the contents plays an important part in fire control. To know the effect of fire and water on various substances. Whether the contents will absorb and hold water increasing load beyond the danger point; whether water will spread the fire. If fire has weakened any part of structure to a point of danger due to quantity of stock or weight of machinery; all these subjects require thought and study.

Portland, Ore., Has Apparatus Crash—A squad wagon in Portland, Ore., while responding to a box alarm, crashed into a freight train which was going against the one-way traffic of the street. The apparatus driver tried to avert the crash and his effort prevented severe injury to the men. As it was, two men were injured and two others were thrown from the apparatus.

EXPLOSIVES: THE BEST WAY TO HANDLE, STORE OR DESTROY THEM

Properties and Hazards of the Various Forms in Constant Use—Best Methods of Storage—How to Destroy Them

THE following suggestions by an expert on explosives will be found of use to fire departments in the handling of these hazardous substances, in case of fire, or in the regulation of their storage:

Explosives, such as are used in mines, quarries etc., are a hazard to the lives of firemen because of their destructive power when ignited or subjected to shock. A fire department should be constantly advised of any storages of such materials so that proper precautions can be taken and when possible, explosives removed from the vicinity of a fire to a place of safety.

Black Gunpowder

Black gunpowder is composed of salt-petre, sulphur and charcoal finely powdered and ground together while moist. It is then compressed into cakes and dried and broken into grains which are sorted into different sizes by means of sieves. It is not sensitive when struck with a hammer but burns rapidly in the open air, and should be handled carefuly and kept away from fire at all times.

Smokeless Powder

Smokeless powder is composed of guncotton made gelatinous by proper solvents and moulded into forms varying in shape from small needle-like pieces to sticks the size of your finger, which are afterwards broken up. It is not very sensitive to shock or friction and in the open air burns very slowly compared with black gunpowder, but when confined it exhibits great explosive power.

Chlorate of Potash

Chlorate of potash is used in some explosives and in dyeing. When mixed with such substances as sulphur, sugar, charcoal and sometimes with the dust from the floor, it is easily ignited by friction or concussion, and if confined, produces an explosion nearly as powerful as that of dynamite. It never should be stored in large quantities in congested areas. A stream of water poured on it before it catches fire will render it practically harmless.

Ball Cartridges

Ball cartridges in a fire will produce a series of rapid explosions resembling machine guns in action but these explosions are not as dangerous as the noise might lead one to fear. When the cartridges explode, the shells not being supported by the barrel of a riffle, burst through the sides and the bullet is sent only a short distance with very little force. If a person protects his eyes he is not likely to receive any serious injury

(*Continued on page* 865)

She Was Effectively "Saved"

Miss Mildred Jackson, as will be seen by the illustration, spent a rather strenuous morning, when she became the "subject" of a life saving demonstration by the Los Angeles, Cal., Fire Department recently. This exhibition was part of an educational campaign conducted for the benefit of workers in the Los Angeles industrial district. In the picture, Miss Jackson is shown in the act of leaping from a four story window into the net.

Fire Hazards of Domestic Oil Burning

Various Types of Burners—Principal Fire Dangers—Industry Still in Experimental Stage—Installations Should be Municipally Controlled

Prepared by CHIEF JAMES J. McMILLAN, Orange, N. J., Assisted by H. E. NEWELL, National Board of Fire Underwriters*

THE domestic oil burning problem is a very real and live one to the fire chief. The following paper is carefully prepared and presents many important facts in this connection of great value:

The use of oil as fuel has shown a steady increase during the past four years. This is especially true in the northeastern states, where during this period, serious difficulties and hardships have been experienced in obtaining coal, owing to the strikes and lack of sufficient transportation facilities. As this section of the country adjoins, or is adjacent to tidewater, householders and manufacturers have discovered that a generally adequate supply of oil fuel as a general rule is readily available. They have discovered further that its combustion is more efficient for the reason that there is no heat loss due to ash, and that it can be purchased almost as cheaply as coal or other forms of solid fuel. As far as cost is concerned, however, this statement does not wholly apply to oil burning for domestic use, which demands an oil that is not viscuous and which will readily flow without preheating. As such a demand naturally necessitates the use of a refined oil ranging from kerosene to a special furnace oil, little actual saving, as compared with coal, can be claimed.

On the other hand, under suitable contract arrangement, a reliable supply can be assured and further charges due to the removal of ashes can be eliminated.

New Form of Combustion Here to Stay

Numerous other claims can be discussed in favor of oil, but in connection with a problem such as this, it is simply necessary to establish the fact that we have before us a new form of combustion that is here to stay and probably greatly increase. As in the case of practically all new subjects, the burning of oil presents numerous problems, not the least of which is that relating to its accompanying fire hazards.

First Type Uses Oil Spray and Air Mixture

There are three general types of oil burners. The first provides for the atomization of the oil by means of air pressure, converting it into a spray or mist which is blown into the combustion chamber where a gas pilot light is provided. Before ignition, the proper mixture of oil mist and air is mechanically accomplished in order to assure efficient combustion; this will prevent smoke and the formation of carbon. Such burners are designed for intermittent firing and the creation of instantaneous high heat controlled thermostatically by the temperature of the living rooms of the residence and also by the temperature of the water in the flow pipe of hot water systems and by pressure in steam heating systems.

A modification of this type of burner involves atomizing but does not require a motor. Water from the street main passes through a pressure reducing valve into a chamber heated by city gas, where it is converted into steam, the escape of which atomized the oil on the principle of an aspirator and blows it through a city gas pilot light. Oil mist is burned in an atmosphere of super-heated steam.

Second Type Vaporizes Oil

The second type of burner vaporizes the oil previous to ignition and then burns the resulting vapor in a proper mixture of air. This is accomplished by means of a pre-heating tube through which the oil passes and is changed to vapor by the heat. These burners are intended for constant fire, the supply of oil being controlled by a manually operated valve. Air is supplied to the vaporized oil by the natural draught of the chimney. Few of these have been sufficiently developed to prevent carbonization.

Third Type Ignites Oil Itself

The third type of burner provides for the ignition of the oil itself in a current of air, supplied either by natural draught or by a small motor driven fan. The oil flows by gravity to a disc plate or shallow pan of iron, which becomes heated sufficiently to vaporize oil, which temperature is maintained constant by the burning oil. A few burners of this class are equipped with an oil pilot light which can be increased to the point where it will nearly maintain the heat obtained by the main burner, or can be diminished at will by a manually operated valve. In this case the main burner is controlled by a thermostat in the living room.

In the case of one burner, the oil flows by gravity, individual drops falling on a bevelled plate of iron, kept very hot by city gas. A motor fan furnishes the air supply. This is a combination of types involving vaporization and early burners of the so-called open-pan type.

Still another kind of burner of the vaporization type has its oil supply under about 20 pounds pressure. The oil is vaporized outside of the heater and the resulting gas passes into an iron receptacle in the combustion chamber, where it is mixed with the proper amount of air and out at the top through a series of lava discs. These lava discs contain a number of very small holes through which the gas or mixture passes and burns on top, acting on the principle of the Meker Laboratory gas burners which generate such intense heat.

The foregoing descriptions are outlined in order to afford a general knowledge of the types of burners on the market at the present time. These descriptions apply to burners which I personally have come in contact with and also other burners as described by Mr. Walter L. Wedger, of the Massachusetts Department of Public Safety, in an address before the Fire Chiefs' Club of Massachusetts.

Two Principal Hazards of Burner

Sa far as the burner itself is concerned, there are two principal hazards; namely, abnormal discharge of oil in the combustion chamber and carbonization. All burners are subject to the former, and most of them to a more or less degree are subject to the latter. Safeguarding the first involves the design of a device that will automatically shut off the supply of oil in case of abnormal discharge at the burner.

Increased Use of Oil Burners

The past four years have witnessed a pronounced growth of the use of oil as a fuel for the heating of dwellings, apartment houses and hotels. This has been mainly due to conditions in the coal industry and troublesome transportation facilities. While both of these factors have been improved by the settlement of strikes and improvement of railroad facilities, domestic oil burning has steadily increased, and it would seem that it is here to stay. Further evidence of this is found in the oil burning cam-

* From a paper read before the Quarterly Meeting of New Jersey Fire Chiefs' Association, Somerville, N. J., May 4, 1927.

"WHAT is needed is an ordinance prescribing the necessary minimum requirements for construction and installation. Control should preferably be in the hands of the fire chief, and provision made for the issuing of a permit upon application and permission for operation only after personal inspection by the fire chief, or his authorized deputy."

paign of at least one large public utility corporation, and the preparations of the oil industry to meet the increasing demand for this kind of oil fuel.

The question that naturally arises is "Does this use of oil as fuel create an abnormal hazard?" The answer depends upon four factors; namely, method of oil storage, design and construction of the burner, installation and quality of the oil fuel. With each of these features properly taken care of, the hazard is comparable with a well constructed and installed equipment for solid fuel. Of course, this should not be construed as meaning that an oil burning system so safeguarded is immune from fires; fires will occur owing to incompetent and inadequate supervision. The personal equation always enters in the operation and maintenance of a mechanical contrivance, so that in these respects the burning of oil does not differ from the burning of coal or wood.

Still in the Development Stage

In the case of solid fuels, however, we have standardized methods of combustion and the comprehensive installation requirements of city building codes. Oil burning, on the other hand, is comparatively new, at least in the eastern states, with consequent numerous variations in design and construction, and, in most cases, with absence of municipal supervision. In other words, this system of combustion for domestic purposes may rightly be considered as still in the development stage. Those features affecting the fire hazard, however, have been taken care of by the construction specifications of the Underwriters' Laboratories.

Oil burner fires are caused by faulty construction, improper installation and, last but not least, by inferior quality of oil fuel.

Faulty Construction One Cause of Fire

The construction of the burner itself and all other parts comprising the complete system should be rugged enough to withstand the wear and tear incidental to operation; in this respect an additional factor of safety is required by reason of the character of maintenance liable to obtain when competent supervision is not provided. The burner should be simple in design and with the end in view of reducing carbonization to a minimum. Abnormal discharge of oil at the burner should be guarded against by means of a device that will collect the oil and automatically shut off the supply to the burner. Most domestic burners are equipped with such devices, but frequently, through faulty design and construction, they are not positive of operation, thus introducing the possibility of failure in an emergency.

Carbonization causes the closing up of the burner orifice and consequent stoppage of flow and extinguishment of the flame; the built-up pressure back of the obstruction will finally clear the orifice and cause oil to be discharged into the highly heated combustion chamber. If a pilot light effecting quick ignition is not provided, an excessive accumulation of vapor will result, and when ignition is finally accomplished, it will be in the nature of an explosive; powerful enough to blow out any weak parts in the furnace setting. Gas pilot lights are usually provided, but some burners employ electric ignition. At all events, the pilot light is of pronounced importance; if of the gas type, it should be so installed within the combustion chamber as to reduce to a minimum the possibility of it being blown out. Carbonization may be due to faulty design and construction, tampering with the needle valve in the oil supply line, or by lack of uniformity in the quality of the oil fuel.

Where electrically operated, blowers are provided for the purpose of atomizing the oil and supplying the additional air needed for proper combustion, the wiring should be safeguarded against mechanical injury and every precaution taken to ensure a constant flow of current during the periods when the burner is being operated. Interruption of current supply will probably result in extinguishment of flame at the burner or incomplete combustion.

Method of Installation Important

Of equal importance is the method of installation. This should ensure against leakage at joints, mechanical injury to piping, and protection of all combustible material, including ceiling in the immediate vicinity of the furnace. Gravity or pressure tanks should be substantially constructed and rigidly supported so as to withstand jarring and vibration. A suitable vent is, of course, essential in the case of a gravity tank. The importance of proper installation cannot be too strongly emphasized as numerous fires have been caused by carelessness in this respect.

Incomplete Combustion Causes Trouble

Incomplete combustion has been another source of trouble with domestic burners. This may be caused by poor installation, failure to place the furnace in good condition previous to burner installation, improper regulation of damper in chimney uptake, poor atomization and varying quality of oil fuel. Incomplete combustion will cause the sooting up of the combustion chamber and chimney uptake, and in extreme cases is accompanied by dense clouds of black smoke, which may spread through the house, causing severe smoke damage by depositing oily soot on everything with which it comes in contact; such occurrences have caused severe damage to furnishings and interior decorations, with consequent heavy losses.

List of Fires Caused by Oil Burners

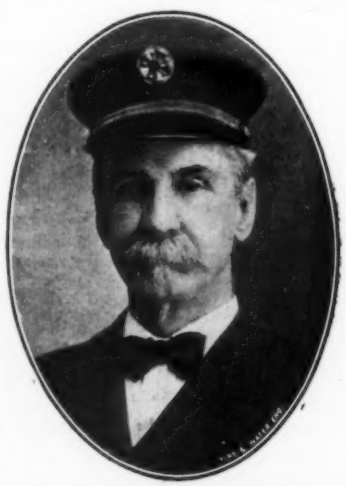
These various features are well illustrated by the following list of oil burner fires that have occurred in one of the New England States:

1. Carbon was allowed to accumulate in fire box. Incompletely atomized oil flowed back on the floor of fire box and thence out on the floor in front of the boiler. Oil in fire box was eventually ignited. Fire department was called and extinguished fire with practically no damage.
2. Interruption of electric circuit to blower motor resulted in the accumulation of oil in the fire box, which oil soon became ignited and ran out on the basement floor. An automatic valve, held open by a fusible link and intended to shut off the oil supply in case of fire, failed to operate. Fire department extinguished fire with very slight damage.
3. Fire originated probably from saturated sawdust which had been used to absorb leakage from oil piping.
4. Fire was caused by stoppage of blower motor, which allowed accumulation of oil in fire box. Fire brick in fire box was hot enough to ignite the oil, which flowed out on to the floor. Automatic device, intended to close valve in case of trouble, had been locked open and thus made inoperative.
5. A cap became loosened from a nipple in the oil supply piping, allowing oil to leak on the floor in sufficient quantity to flow back into the ash pit, where the oil was ignited.
   This was an unapproved equipment, oil being supplied to the burner by gravity from a five gallon storage tank.
   Fire was extinguished by fire department with slight damage.
6. Fire was probably caused by the flame going out, thus allowing oil to flow into hot fire box and to generate gas in sufficient amount to cause a slight explosion.
   This equipment was unapproved and was not equipped with a pilot burner. Oil was stored in two 50-gallon drums from which it was fed to a 25-gallon tank, used as an air receiver, air pressure being created in this receiver by means of a hand pump.
   The fire was of small consequence, and was extinguished by the public department.

(*Continued on page* 862)

Ex-Chief of Camden, N. J., Dead

Samuel F. Elfreth, for many years chief of the fire department in Camden, N. J., died in Wildwood, N. J., where he had been spending the summer. Death was brought on by his advanced age of eighty years.



The Late Samuel F. Elfreth, Ex-Chief of Camden, N. J.

Virtually his entire life was spent in fire-fighting, first as a volunteer fireman and later as a member of the paid department. He was a member of the Independents, a company in the northeastern section of the city.

In 1869, Camden established a paid fire department and it was the custom at that time to elect a chief for a three year period. It was usually a toss-up as to whether Mr. Elfreth or a man named Bender would get the honor. In 1892 the city decided to make the office a permanent one depending upon the good behavior of the chief. Elfreth was appointed in January of that year and he was retired on a pension in January 1914. He was succeeded by Charles Worthington who was killed in a fall while directing the fighting of a blaze.

Chief Elfreth was a great lover of horses and constantly fought against the introduction of mechanically drawn vehicles in the fire department. However, he had a losing fight as the council tried steam fire engines and were pleased at the results. Even though he was on a pension, he would visit the fire stations frequently and he was often consulted on fire department matters.

Sparks Start Big Boiler Plant Fire

Wooden Construction, Oil Soaked Floors and Large Areas Do the Rest—Plant Burned to the Ground

THE fire described in this article of the series on administration was handled by a volunteer department.

The city in which this fire occurred has a population of approximately 8500 and the fire department consists of three engine companies and one truck company.

Engine Co. No. 1 is equipped with 750 gallon combination pumper and hose car; Engine Co. No. 2 has a 500 gallon pumper and hose car and Engine Co. No. 3 has the same type and size of machine. The truck company is equipped with a city service truck.

The property involved, and which is shown in the sketch herewith, was located on the outskirts of the city. The water supply was poor there being but one long six inch main and three hydrants located at the plant.

Within the plant grounds was a 30,000 gallon water tank well filled and connected to the six inch main by a six inch connection. At the time of the fire the valve in the six inch connection was closed so that the department did not utilize the water in the tank.

Description of Property Involved

The plant was made up of a number of separate buildings attached, each built of wood joists with wood walls and plank flooring. While only one story in height the buildings were comparatively high, and large open spaces characterized the entire plant.

To the west of the main buildings were a group of small store-rooms and other structures all of plain construction.

The Fire

It was the usual custom for the switch engine to come in on the siding and remove loaded cars after working hours, in order to connect them on to the daily freight train which stopped to pick up freight at this city. Apparently the switch engine in shunting through the yards at the plant discharged a number of live cinders either through the stack or from the fire box, for subsequent investigation showed that fire had burned over quite an area of rubbish between the shed, alongside the track, and the main plant building. It is assumed that the cinders set fire to this rubbish and the fire spread until it involved both the small buildings at the west of the plant and the main building as well.

The fire was not discovered until it had reached such a point that it illuminated the sky and was noticed by towns people about a quarter of a mile away.

An alarm was transmitted and the four volunteer companies went at once to the scene of the blaze.

How the Fire Was Fought

The fire having gained its greatest intensity around the small buildings, Engine Co. No. 1 upon arriving at the fire connected to hydrant No. 1 and stretched in a single line to the court between the small buildings and the large one at the west of the plant.

Feeling that the machinery, which included heavy metal working machines employed in the construction of boilers, was in no danger of fire, the chief efforts of the first company were directed to wetting down the small buildings which were ablaze.

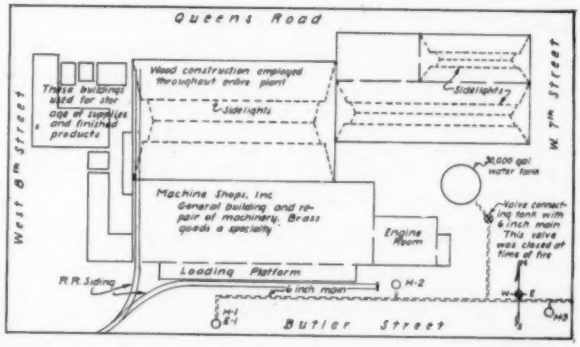
Engine Co. No. 2 was stationed at hydrant No. 2 and Engine No. 3 at hydrant No. 3.

Each of these companies stretched a single line through the large building at the south and assisted the first line in operating in the court.

After fighting the fire for possibly fifteen minutes it was noted that the west wall of the plant was ablaze on the inside. Attention was then directed by Engine Cos. Nos. 2 and 3 toward handling this fire. The large open area, however, and the poor supply of water which made it necessary for Engine Co. No. 1 to eventually shut down to give the other two lines a chance to operate, resulted in continuation of the spread of the blaze. It was not long until the fire spread over the entire northwest building of the plant and continued to spread through an opening into the northeast building.

The Fire Spreads

Only companies Nos. 2 and 3 continued to operate, due to shortage of water which eliminated the third



engine. Both of these companies had insufficient supply and had to throttle down to prevent vacuum showing on their gauges.

It was soon seen that the entire plant was in danger and attention was directed toward saving the large buildings at the south.

For a while it appeared that this might be possible but as fire increased in its intensity and the oil soaked floors took fire, the men were forced to retreat and with the weak streams could not operate effectively at a distance.

As a result the entire plant was destroyed together with a group of buildings at the west end.

It may be safely said that the lack of water was largely responsible for the spread of this fire. Had the department had sufficient water during the first fifteen minutes there is no reason why the fire could not have been held to the small buildings at the west end.

The Editor's ideas on the handling of this fire will be given in the next issue of this journal.

Council Bluffs, Ia., Department Undermanned—Fred W. Baer, president of the International Association of Fire Fighters spoke to the firemen of Council Bluffs, Ia. He said the housing and working conditions of the firemen were good but not enough money was allowed to properly maintain the department and that it was undermanned.

Traffic Signal in Brookline

As part of the new signal system installed in Brookline, Mass., by the Gamewell Company, fire alarm box pedestals of the design illustrated have been placed in various sections about the city.

At the very top of the pedestal there is a cluster of three lights. The light in the center has a red lens and is used to show the location of the fire alarm box at night. The light at the right has a green lens and it is used for flashing code signals for the police officers on their beat. The light at the left has also a red lens but this light is used to flash a traffic warning of the approach of fire apparatus.

Below the cluster of the three lights there is both a klaxon horn and a vibrating bell. The horn is used as an audible signal to summon policemen to the box by means of coded signals. The vibrating bells are for use of the traffic department and furnish audible notification of the approach of the fire apparatus.

The plan used by Brookline permits one pedestal to be used for a number of the co-related duties of both the police and the fire departments.

Brookline Traffic Signal

Firemen May be Used for City Work

Either the firemen of Enid, Okla., will do the work they are called upon to do by the city or they will be dismissed from the fire department. This ultimatum was made by the mayor to settle the action that was started at one of the city's fire stations.

The mayor stated that he had written to the heads of other fire departments and that it was the custom to employ firemen on other city work when not actually engaged in fighting fires. Firemen have been used as carpenters, plasterers, and plumbers. However, the men are prohibited from engaging in work outside of their regular hours for monetary gain. It was claimed that several of the men had side lines in addition to their regular duties.

Old Boiler Used in Fire Protection

In the majority of cases water under pressure is not available at small town factories, small size lumber manufacturing plants and yards because the population of the vicinity isn't great enough to justify the erection and maintenance of an elevated water tank. There are many great fire hazards in such establishments because of the lack of water. The drawing illustrating this article shows a simple device that is arranged at very small expense if an old discarded steam boiler that will still hold 75 to 100 pounds pressure safely is available.

It is well known that when unslacked lime comes in contact with water, the mass expands and volume results. When a quantity of unslacked lime is enclosed in a container with a small vent opening left to admit water, and the container is thrown into a stream or body of water, a violent explosion will soon result because of the gas generated by the slackening lime within. Therefore, if a quantity of unslacked lime were dumped into a steel enclosure that would resist expansion to 75 pounds pressure or more, this amount of force would be transmitted to the water.

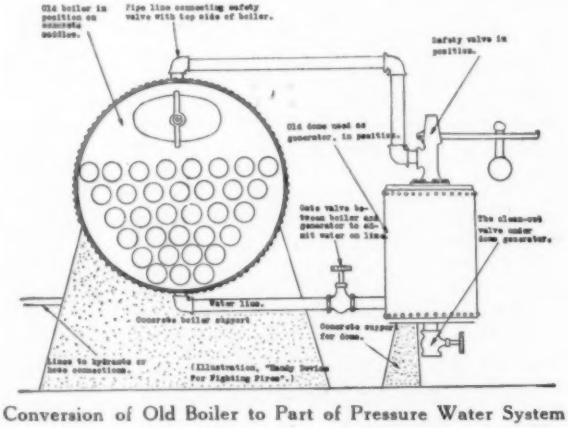
The illustration herewith represents an old junked boiler that was discontinued in steam generation service because it failed to pass a sufficient degree of hydrostatic pressure, but it will still safely carry 100 pounds pressure. It is of the individual or detachable dome type, the dome being originally connected with the top side of the hull with a pipe nipple. The safety or "pop" valve of the boiler is of the weighted lever or springless type and it is easy to remove the safety valve by removing the lever with its weight; the valve can be lifted from the top end of the valve housing. The dome from the boiler was removed and connected with it in a different manner, near the ground and at one side; the top end was connected with a 4 inch pipe line as illustrated, to the original dome pipe hole in top side of the boiler hull. A low stool or base is made of concrete on which one side of the dome now rests as a support. The boiler is mounted two feet above the earth on concrete saddles. Another pipe line connects the old injector pipe entrance or water cock under the boiler's rear end with the side of the dome near its base. A gate valve is installed in this line near the old dome. Another gate valve of the sliding shutter type is connected by means of a short nipple to the lower end of the dome as shown. This is to clean out the dome which will now be used as a pressure generator itself.

The old boiler is kept about full of water at all times when not in actual use. Before filling it, the valve in the pipe line between rear end of boiler and the dome is shut, and must be of a perfect condition so as to prevent any water leakage. The old dome is then filled about half full of small lumps of unslacked lime poured in through the safety valve passage which has been removed as explained. The valve must be replaced and the weight set at a safe position on the lever to allow escape of compression if it exceeds the safety mark. All holes or leaks must be securely plugged and stopped in the boiler's hull to prevent waste of pressure by leakage. The device stands thus all the time until an outbreak of fire is reported, when the gate valve between boiler and dome is opened quickly, admitting water into the dome with the unslacked lime; gas is generated and expands quickly because of the slacking lime, and the pressure within the whole apparatus soon rises to a high degree.

Pipe lines connected with the under side of the boiler lead to the various hydrants or terminals stationed about the plant where hose connection is readily made. It is entirely necessary that these water lines be connected with the bottom side of the boiler and not near the top, as only the gas fumes will escape through the pipes instead of water if they are connected to the top side. An ordinary steam gauge or pressure indicator should be attached. It will be but a few minutes after the water is turned on the lime before the gauge will show a reading. Valves in the hose lines are necessary to hold the pressure till it reaches a workable stage. These would of course be most conveniently located at the end of each line where hose is connected.

The reason a sliding shutter type of valve is best under the dome for cleaning it out is that it makes the removal of used or slacked lime easier than with the conical, seating shutter type. It is not difficult to remove the used, slacked lime from the generator by washing it out through this valve, using a small iron rod to punch through it from the safety valve opening. This clean-out valve must be also closed when generation is started or the water turned in.

A still more efficient device can be arranged with a pair of old boilers, using one as a generator and the other as a water reservoir. These placed side by side would only need two pipe lines connecting them, one connecting their top sides and another the lower sides with a valve in this lower line to separate the water from the lime until needed. It would be best to stand the generating boiler containing the lime on one end, so that the level of water when turned in from the other one would not reach the top end of the standing one, at which end the top pipe line should be connected. It would be also easier to


Old boiler in position on concrete saddles.
Pipe line connecting safety valve with top side of boiler.
Safety valve in position.
Old dome used as generator, in position.
Gate valve between boiler and generator to admit water on line.
Clean-out valve under dome generator.
Water line.
Concrete boiler support
Concrete support for dome.
Lines to hydrants or hose connections.
(Illustration, "Handy Device For Fighting Fires".)

Conversion of Old Boiler to Part of Pressure Water System

recharge the generating boiler with unslacked lime because of the manhole and lid, the hole being sufficiently large to admit the largest pieces of lime without breaking them up. It is not necessary that old steam boilers be used; but the old boilers can be had at little or no expense, and the detachable dome makes a convenient generator as described. The force set up by the lime on the pipes leading to the various points about the plant is sufficient to throw water streams with considerable force and for a considerable distance. After a working pressure is reached the still slackening lime will maintain or raise it for several minutes.

L. M. JORDAN.

WITH THE EDITOR

Destroying the Department's Efficiency

It is hard to conceive of anything that will quicker destroy the efficiency of a fire department more than frequently changing the man at its head. If a careful census of the fire organizations in the medium and larger cities of the country were to be taken it would undoubtedly show that those of the greatest efficiency have had the same chief in office for the longest term of years.

On the other hand, it would not be a difficult matter to cite instance after instance where fire departments have been kept in a semi-demoralized state because of frequent changes in this office. Of course there are undoubtedly isolated cases where a change is in the best interest of the fire service, but it is exceedingly rare—if ever—that such a change is brought about by politics. From the standpoint of efficiency, the plan of changing the fire chief every time the political complexion of the city or town is reversed is essentially a bad one.

Such a system undermines the morale of the department. It destroys the incentive of the officers to progress or improve themselves. If the chief knows that his tenure of office is uncertain, or subject to the whims of politicians or the behests of a political party, it is highly improbable that he will show the same interest in his work or his department as if he knew that his position was secure so long as he performed duty conscientiously and efficiently. He is likely to have an eye constantly on the lookout for a job of greater permanency, and a man with this idea in mind cannot be expected to render the best service.

There is also another very important angle from which to view the constant change in the office of chief. This is the effect upon the personnel of the department. It is not within reason to expect perfect discipline in a fire department, where the men know the chief is dependent upon party influences to hold his position and that a certainty of a change in the headship exists with every alteration in the political complexion of the municipality's administration. To hold his men the chief must have their respect and this respect will be highest when the firemen know their commanding officer retains his office through virtue of his ability alone.

Many departments—and these are ranked among the most efficient—keep the capable chief in office, removing him for cause only. It would be for the best interests of every city—both large and small—to adopt an ordinance making the office of chief a permanent one and then stick to it. No man, in whatever position he is placed, can be expected to give his best efforts to his vocation, when not only is there no prospect of anything in store for him, but also his future constantly looms with uncertainty and with the ever present prospect of losing out from no fault of his own.

The Short Course Fire School

A tendency that is growing in the effort to increase the efficiency of the fire-fighter is the inauguration of the short course fire school. This plan has been successfully tried recently in Illinois, Iowa, South Carolina, etc., and the results have been uniformly good; the chiefs of the departments which have taken advantage of the course of instruction expressing themselves in practically every instance as being well satisfied with the improvement in the men who attended the schools.

This plan provides an opportunity especially for the smaller fire department members to receive instruction in fire-fighting that they otherwise would find it hard to obtain. The men who attend these gatherings, lasting usually about a week, besides receiving intensive instruction in practically all branches of fire department work, meet and compare ideas with men from other fire departments, which in itself will have a broadening effect upon their knowledge. These men will return to their home cities prepared to pass on the instruction received to their comrades, and thus the general efficiency of the fire departments involved in the schools will be advanced. Other states will no doubt adopt the short course school for their fire departments.

The Chief is the Best Judge

Why is it that when city authorities are bitten by the economy microbe, the first object of attack almost invariably seems to be the fire department?

An instance of this kind is to be found in Fresno, Cal. Chief Baird, who bears the reputation of an efficient executive, requested recently a budget increase of $8,825 for his department, specifying the reasons therefor. The finance commissioner of the city criticized the increase, and suggested retrenchment, even asking if one of the fire companies could not be dispensed with. Chief Baird replied that the engine house of the company could be done away with, as it is the oldest in the city, but that the company should be retained in service and moved to another quarter. This, however, did not agree with the commissioner's idea of "economy." The chief then warned the commissioner that a reduction in the fire-fighting force would mean undoubtedly a raise in insurance rates. This apparently had a similar effect to the waving of a red flag before a bull. The commissioner waxed wroth and declared that he for one would

not be dictated to by any association of fire underwriters, and that the cuts in the fire budget would go through in spite of the underwriters' "bluff."

This is another of the instances in which an official at the head of another department of a city government sets up his opinion as authority against that of the chief in matters of which the head of the fire department must of necessity be the best judge. If, for economy sake, it is proposed to reduce the man power of the department, the final say in the matter should remain with the chief, as he must be possessed of the requisite knowledge as to what the strength of his force should be, if he is worthy to hold the position at its head. That an official not connected with the fire department should have the power to overrule the chief in matters of this sort, would seem to be not only ridiculous on the face of it, but also a serious menace to the safety and welfare of the city.

Chief Brownewell of Wichita, Dead

Following a cerebral hemorrhage, Chief Al S. Brownewell of Wichita, Kans., died at his home and brought to a close forty-two years service in the employ of the city.

The Late Chief A. S. Brownewell

He was a member of the famous fire brigade which exhibited at the World's Fair in St. Louis—an honor which was coveted by the entire fire-fighting force at that time.

He went to work in the department on November 15, 1886 at a salary of $50. Shortly afterwards he was made forman and in 1889 he was promoted to assistant chief. Mr. Brownewell resigned in 1892 to return to Canton, Ohio, the hometown of his mother, but within three months he returned to Wichita again as assistant chief. He was advanced to chief in 1905 and he resigned in 1907 to allow A. G. Walden who was temporarily removed as chief because of politics to come back. When Walden died in 1917, Brownewell was again made head of the department. He was a conspicuous figure at the various fire chief's conventions.

Chief Brownewell is survived by his wife and seven children. The favorite story told of the chief is the manner in which he saved a life at a hotel fire. A man on the third floor yelled to the crowd below that he was going to jump. To leap would have meant instant death.

"Jump, you crazy loon," yelled the chief who had sized up the situation, "only keep still about it."

The man went back into the building and was rescued.

New Fire Station for Newark, N. J.—Plans are being made for the erection of a new fire station in the Hillside section of western Newark, N. J.

Ex-Chief Whitmarsh of Braintree, Mass., Dead—Funeral services were held on August 2 for Ex-Chief Frank O. Whitmarsh of Braintree, Mass., from his late home.

Stockton to Entertain California Firemen—Stockton, Cal., is making preparations to entertain the delegates to the annual convention of the California State Firemen's Association which will be held on August 24-27. There will be an elaborate program of entertainment for the visitors at the fair grounds and on one of the evenings there will be a barbecue followed by a dance.

HOW THE EAST BAY CITIES ARE PROTECTED FROM FOREST FIRES

Various Agencies Unite in the Establishment of a Patrol and Watch Service in the Elevated Wooded Sections of the District*

WATCH towers throughout the East Bay cities section in California protect the community from disastrous forest fires. The latest tower has been erected on Round Top, the highest peak in the Contra Costa hills back of Oakland and a complete fire-fighting unit is in operation under the general supervision of the Department of Forestry.

The fire watch tower on the summit of Round Top is a steel structure with a glass inclosed room at the top in which are located telephone, maps and instruments for detecting and locating fires. It is also equipped with a fire siren which is sounded whenever fires are discovered. The tower is sixty feet in height, or twenty feet higher than the one on Grizzly Peak, and it was erected according to specifications of the State Forestry Department.

Before the tower could be built, it was necessary to erect a road from the site of the East Bay Water Company picnic grounds to the summit of the peak.

Many Companies Cooperate

The Pacific Telephone and Telegraph Company and the Pacific Gas and Electric Company have jointly constructed a pole and wire line over a mile in length to the summit of Round Top and donated the use of this service and equipment to the Contra Costa Hills Fire Protection Committee as their contribution to the fire protection plan.

The East Bay Water Company not only contributes $3,000 a year to the work, but also the services of fourteen deputy fire wardens and the headquarters for the organization. The city of Berkeley contributes $3,000 a year and the full cooperation of the fire department and of all other departments for hill and fire emergency service. Other organizations have contributed and are supporting this work.

The tile house on Grizzly Peak has the national reputation as being perhaps the finest and most complete fire watch station in America.

Work Started Twenty Years Ago

Less than twenty years ago, the hills lying along the easterly portion of the cities of Oakland and Berkeley were not, as now, covered with groves of forest trees, but were practically bare on the western slopes and very sparsely dotted with oaks on the eastern side. At that time, the only visible mantle to the hills was the wild grass, green and beautiful in the winter, but rather monotonous in the summer when dry and brown.

This Is the Type of Property Protected

A view of the Contra Costa hills from the picnic grounds of the East Bay Water Company. It gives some idea of the large amount of wooded land to be protected by the watch service established in the hills.

During the time previous to the planting of the trees, grass fires were of common occurrence during the summer months and little heed was given to the matter excepting by the people depending upon the grass for the use of cattle.

During the year 1910 work was commenced on a general scheme of forest planting in the Contra Costa hills. A great

(*Continued on page* 870)

* Excerpts from articles in publication of East Bay Water Company.

QUESTIONS AND ANSWERS

Conducted by FRED SHEPPERD, B. Sc., M. E.

"He that questioneth much shall learn much"—BACON

NOTE—Readers of FIRE ENGINEERING are invited to send in questions, which will be answered in the order received Names are omitted from questions unless otherwise specified.

A Water Tower Problem

To the Editor:

I am sending herewith a question which I would appreciate you answering at an early date, giving such figures as may be necessary in checking up my solution.

T. H. A.

Question: It is desired to supply a water tower with two pumpers, each pumping through two parallel lines of 2½ inch hose 800 feet in length each, making a total of four 800 foot stretches of 2½ inch hose. The water tower is to be extended 65 feet, two-inch nozzle is to be used and 90 pounds is desired at the nozzle.

Find the discharge from the nozzle under the above conditions; find the discharge from each engine.

What engine pressure will be required?

Could second size engine be used under the above condition?

Answer: The discharge from the nozzle is found by the discharge formula, namely, discharge in gallons per minute

$= 30 \times D \times D \times \sqrt{}$ pressure.
$= 30 \times 2 \times 2 \times \sqrt{90}$
$= 30 \times 2 \times 2 \times 9.75$
$= 1137$ gallons per minute.

Both engines are working under the same conditions, each will be assumed, and justly, so, to discharge the same quantity of water. Each engine will therefore be delivering $1137 \div 2$ or 568.5 gallons per minute.

To find the engine pressure, either of the two solutions below deserve full credit.

First reduce the layout of four lines of 2½ inch hose to a single line by dividing each pair of lines by 3.6 and then dividing the two lines so found by 3.6 again.

In other words divide the length of either line in the first case, 800 feet, by 3.6 and we have a length of 2½ inch hose 222 feet long. This length of 2½ inch hose represents the length of a single line which will have the same friction characteristics as two parallel 800 feet lines of 2½ inch hose.

By this operation the four lines reduce down to two lines 228 feet in length.

To reduce these two lines to a single line we again divide by 3.6 or $222 \div 3.6 = 61.7$ feet of 2½ inch hose.

The second method of working the problem is precisely the same as the first except that instead of reducing the four lines to a single line by two operations, it is all done in one operation by dividing by 12.4.

Thus, $800 \div 12.4 = 64.5$ feet of 2½ inch hose.

Now solve for engine pressure (neglecting momentarily back pressure in the water tower and the friction loss therein).

Engine pressure = N. P. $\times$ (1.1 + K $\times$ L).

To find engine pressure using the first method, L will be equal to $61.7 \div 50$ or 1.234.

K, for 2½ inch hose and 2 inch nozzle is 1.55.

E. P. $= 90 \times (1.1 + 1.234 \times 1.55)$.
$= 90 \times (1.1 + 1.91)$.
$= 90 \times 3.01$.
$= 270.9$ or 271 pounds approximately.

The back pressure is found by multiplying the elevation of the nozzle by .434 or 65 x .434 = 28.2 pounds back pressure.

The friction loss in the water tower is taken at 15 pounds.

The corrected engine pressure will then be 271 + 28 + 15 or 314 lbs. approximately.

The second method of solving by using 64.5 feet of 2½ inch hose is precisely the same. L will be equal to $64.5 \div 50$ or 1.29. K is, as before, 1.55.

E. P. $= 90 \times (1.1 + 1.29 \times 1.55)$.
$= 90 \times (1.1 + 2)$.
$= 90 \times 3.1 = 279$ pounds.

Again, the back pressure is 28 and the friction loss 15 pounds. Corrected engine pressure is thus 279 + 28 + 15 or 322 pounds.

Although there is a difference between the engine pressures as secured by these two formulas it is small compared to the difference which would be secured by using different grades of hose.

Second size engines could not be used in this layout. They would not be capable of discharging each 568½ gallons per minute under 314 or 322 pounds pressure.

Philadelphia Promotional Questions

To the Editor:

Below is a list of questions which were asked in a recent examination for the position of Captain in the Bureau of Fire which I would like very much to have you answer in an early issue.

Question 1. You are the first officer to arrive with an engine company at a fire in an old style five story tenement house at 10 P. M. The fire has started on the first floor and has possession of the stairwell. A hook and ladder arrive and report to you before the arrival of a superior officer. State in detail the action you would take with your own company and what orders you would give and what disposition you would make of the two other companies.

Question 2. An engine is pumping through 10 lengths of 2½" hose to a fire on the third floor of a loft building. What pressures would you use at engine and nozzle?

(A) For a mobile line playing from the ground on the outside of the building?

(B) For a line playing inside the building on the third floor? What nozzles would you use (A) or (B)? Answer fully.

Question 3. You are in command of a truck company and are ordered to ventilate a building charged with heat and smoke. The building is six stories high and is entirely used for dyeing and cleaning with offices on the first floor. It is equipped with elevator and stand pipe systems but no sprinklers. State fully what you would do and what precautions you would take in ventilating.

Question 4. What special hazards are connected with fires in the following. Explain fully.

(a) Wholesale Candy Factory.
(b) Fat Rendering Plant.
(c) Wholesale Drug House.

Question 5. What auxiliary fire appliances would be attached to a manufacturing plant 10 stories high with one street frontage?

Respectfully yours,
P. F. D.

Answer 1. This question is somewhat confusing. Problem states that your own company and a truck company arrive before the arrival of a superior officer. Question asks what disposition you would make of your company and the *two* other companies.

It will, therefore, be assumed that three companies are available, and these include the two engine companies and one ladder company.

The chief danger in connection with a fire in an old style tenement occurring at night is the possible loss of life. The history of such fires show that life is in greatest danger on the top floor. The heat and flames arise through the stairwells to the top of a building and having no vent to the atmosphere, bank up in the enclosed space. A person in any of the rooms bordering on the stairwell upon opening a door to determine the source of the smoke, would be met with a rush of flames sufficient to overwhelm him. This seems to be the reason for so many lives being lost in tenement house fires at night.

The construction of the stairs as well as partitions is highly combustible and it takes but a few minutes for the stairways to become fully involved.

Unless very fast work is done by the fire department in wetting down the stairs there is a very great likelihood that it will soon be out of commission for use either by the fire department or the occupants of the building.

This being a night fire, and in a highly combustible building, a second alarm is justified. The officer arriving with the first alarm should immediately transmit a second alarm.

Assignment of lines on the first alarm should be as follows, assuming two companies and a truck company are at hand; first company stretch in two lines, one to operate around the foot of the stairway and the other to proceed up the stairway as quickly as it can. The second line should wash down the stairwell by

directing stream vertically thereinto to kill the body of the fire. This will check its spread until the fire around the base of the stairs has been brought sufficiently under control to make possible and safe the progress of the second line up the stairs.

The truck company to ventilate and get ladders into position. One or two men should be sent to the roof of the building at once to open over the stairwell. In opening up over the stairwell have them make sure that an opening is provided through the roof and the ceiling below so that the heat and smoke can pass unobstructed to the atmosphere above. This will clear the stairwell and make it possible for the men to operate therein, and at the same time will check the spread of the fire so that rescues can be made where required.

The remaining members of the truck company can place ladders and assist those in the building to safety.

If necessary, members of the second engine company on the scene may give a hand at this work, placing ladders front and rear if fire escapes are not available.

If fire escapes are at hand then it will only be necessary to run a ladder up to the front and rear and members of the company assist people on the various floors to safety.

Once the occupants have been gotten out of the building, the second engine company will then be free to assist the first engine company by stretching into the fire. One line should be stretched into the front of the building and one to the rear, if such feasible. The fact that the fire has started on the ground floor makes it necessary to devote early attention to the basement. One line already operating on the ground floor with the second line ready to go up the stairwell, together with a second line from the second engine company will be able to hold the fire until help arrives with the second alarm assignment. It must be remembered, at all times, that life is to receive first attention. That is why the first engine company placed lines in operation—to hold the fire from spreading and make rescue more certain. The first truck company ventilated so as to clear up the stairwells and make possible the holding of the fire by the first engine company at hand. This truck company along with the second engine company got ladders in operation to perform the rescue work. All in all, efforts were directed solely toward saving life. After life has been taken care of then all efforts are directed toward extinguishing the fire.

Answer 2. For inside work, nozzle pressures of from 30 to 40 pounds are satisfactory, and 1″ or 1⅛″ nozzles are usually employed—of the shut-off type.

For outside work nozzles of from 1¼″ in diameter upward are usually employed. A 1¼″ nozzle is considered the smallest nozzle which can be satisfactorily used for street work at fires.

For street lines 50 pound pressure and upward is satisfactory.

Thus on the line operating within the building we would use 1⅛″ nozzle and have 30 pound pressure while on the street line in this case we would use a nozzle 1¼″ in diameter or greater with a pressure of 50 pounds or thereabout.

In determining the size of the nozzle certain rules are usually employed. The one which would apply in this case is as follows: For a medium stretch of hose the size of nozzle should be one size smaller than one half the hose diameter. Ten lengths is considered a medium stretch. Thus according to this rule we could not use a nozzle greater than 1⅛″. However, in this case, where a single line was being employed and a 1¼″ nozzle was desired it would be safe to use such. The friction loss will naturally be greater than might be desirable but where a single line is to be used as outlined in this problem a 1¼″ nozzle would not be too great.

To determine the engine pressure on the street line we would proceed as follows:

Employ the Underwriter's formula which is

Engine pressure equals nozzle pressure x (1.1 plus K x L)

K, which is a factor depending upon the diameter of the hose and the size of the nozzle, is, for 2½″ hose and 1¼″ nozle, .248.

L, which is the number of 50 foot lengths of hose in the line, is 10.

Then engine pressure equals 50 x 1.1 plus .248 x 10.

Equals 50 x 3.58 equals 179 pounds.

This is the pressure that would be required at the engine to give 50 pounds at 1¼″ nozzle attached to 10 lengths of 2½″ hose.

To determine the pressure on the 1⅛″ nozzle used inside the building—on the third floor—the method of solution would be as follows.

Back pressure due to the elevation of the nozzle above the street (approximately 28 feet) would be 28 x .434 or 12 pounds approximate.

Engine pressure (not taking into account this back pressure) would be found as in the previous case, namely.

Engine pressure equals nozzle pressure x 1.1 plus K x L.

K for 2½″ hose and 1⅛″ nozzle is .167.

L would be 10 as before.

Then engine pressure equals 30 x 1.1 plus 1.67 x 10.

Equals 30 x 2.77, or 83 pounds.

To this must be added the back pressure, which the engine must overcome, making a corrected engine pressure of 83 plus 12, or 95 pounds.

Answer 3. It would be exceedingly dangerous to enter a building of this sort by means of stairways to ventilate, particularly where there are present quantities of volatile inflammables used in cleaning. The fact that the building is charged with heat and smoke would indicate that there is also present considerable quantities of combustible vapors in the mixture. Improperly opening for ventilation might result in an explosion (so called "back-draught") with dangerous results. To ventilate a building of this sort it will be necessary to start from the top. As lieutenant in charge of engine company it would be your duty to have men go at once to the roof by way of ladder (if fire escapes are not provided) and have men open up over elevator and stair shaft. From the roof the various windows on the top floor could be opened by the use of hooks.

After providing thorough ventilation at the top of the building then the bottom may be opened up by opening doors and windows on the street level. After this has been accomplished the other windows along the line of the fire escapes (if such are available) may be opened by men proceeding down fire escapes from the roof.

It is a safe rule to follow in ventilating to ventilate high where a building is charged with smoke and gases which may be combustible. This provides a vent for volatiles to pass out into the atmosphere and prevents the so called "back-draught" caused by opening up the lower part of the building and letting fresh air come in contact with the unburned gases within the building, and where open flames or other sources of ignition are present.

Answer 4. (a) The chief hazards in connection with fires in wholesale candy factories are first, life hazard due to the great number of employees in such establishment; possibility of explosions from sugar pulverizers, dusters, cocoa pulverizers, and starch. The use of alcohol and other inflammable volatiles also adds to vapor explosion hazards.

Where cocoa is ground there is a possibility of explosions from this substance.

The presence of great quantities of candy in boxes as well as the empty containers, also increases the intensity of fire once it starts.

The cooking furnaces and kettles, while not adding seriously to a fire once it has gained proportion, are a source of many fires in such factories.

(b) Probably the greatest hazard in connection with a fire in a fat rendering plant is the presence of large quantities of heated grease in cauldrons. This grease, when heated, as it is while being purified, is extremely dangerous when fire takes place. Water thrown into such a container is quickly vaporized and the production of steam causes the fat to be thrown in all directions. This, in addition its danger to the operating forces, also tends to increase the spread of fire.

Cauldrons, which are heated by other methods than steam, are subject to rupture when struck with streams. There is also a possibility of the supports beneath cauldrons giving way due to weakening by fire and in such an event the spreading of the heated greases would prove exceedingly dangerous both from the standpoint of the men as well as fire safety.

(c) Probably the presence of great quantities of chemicals constitutes the chief hazard of wholesale drug house fires. There are such a multiplicity of chemicals and many of which react violently when coming in contact with others, that fire in such an establishment is always a dangerous proposition. The fumes given off by these chemicals, particularly such as nitric acid, hydro cyannic acid and others are deadly to human beings. Where chemicals are stored in carboys or smaller glass containers there is always a likelihood of these containers breaking and so endangering the men operating around the fire in a wholesale drug establishment.

Answer 5. This question applies to local regulations and information necessary to answer it is not at hand.

Shamokin to Entertain Pennsylvania Firemen—The annual convention of the Pennsylvania State Firemen's Association will be held in Shamokin on October 4-6. Chief Rosar of Scranton is scheduled as one of the speakers.

Waukesha Moves Eastern Office—The Waukesha Motor Company, manufacturers of heavy duty Ricardo Head industrial and vehicle engines, have opened their new eastern sales office at 8 West 40th Street, New York City. This office was formerly in the Aeolian Building, 33 W. 42nd Street.

Walla Walla Firemen Camp Out—While the present station No. 2 in Walla Walla, Wash., is being torn down and a bungalow fire station erected, the firemen are enjoying a summer of camping out. A large tent is used for recreational purposes, the men are quartered in a shed and the apparatus is housed in another shed nearby.

The Mass of Bricks, Mortar and Burning Grain and Hay Which Covered the Two Atlanta Firemen Killed by Collapse of Wall

TWO FIREMEN CRUSHED BY WALL WHICH FALLS IN WAREHOUSE BLAZE

Atlanta Loses Two Men in Big Fire—Several Others Injured When Debris Is Showered Upon Them

ATLANTA, GA., suffered a fatal fire on Saturday, July 30, when the W. L. Fain Grain Company's building was destroyed. The blaze occurred early in the morning, originating, it is supposed, from spontaneous combustion, and the fire had gained such control over the entire building when the first alarm companies arrived that Chief William B. Cody decided the only course was to protect the surrounding structures, and confine the flames to the building of origin.

Shortly after the fire was apparently under control, Chief Cody was called away from the scene, but before he left he issued orders for the men of his department to keep clear of the crumbling walls. Captain Clyde Cawthon, of No. 5 Company, arrived with his company shortly after the chief left, and with Company No. 4, pushed the men into a strategic position, placing two hose lines through a window of the burning building. Evidently he had not been informed of Chief Cody's order to keep away from the walls, and caused a ladder to be placed from a vacant building, some 12 feet away, to the window. The advantage of this move was not only to reduce the flames within the Fain building but to prevent them spreading to the big gas reservoirs of the Georgia Power Company, dangerously near. Six men were on the ladder, others on top of the walls, and still others handling the hose from the roof of the lower structure on which the ladder rested, when a shout called attention to the bulging walls. With hardly any warning, the immense mass of masonry weakened by the flames and forced out by the pressure caused by expansion of the wet hay and grain, crashed upon the men below. Captain Cawthon and James B. Richardson, of Company No. 4, were buried under tons of the debris, and probably instantly killed, and eight other men, who had jumped at the first warning, were more or less seriously injured, some of them being literally dragged from death by their comrades, who rushed to the rescue as the walls collapsed. The wall fell against the adjoining building and it was only by leaping from the roof to the ground that the men on the roof were saved, as the entire structure immediately caved in. Practically all of those on the roof escaped with minor cuts and bruises. The loss was estimated at about $75,000.

Chief Cody was grief-stricken when informed of the accident and hurried to the scene to aid in the rescue work. He joined his men in a determined effort to extricate their imprisoned comrades and the speed with which they worked probably saved the lives of many of them. Chief Cody praised the zeal of the men, and declared that only a desire to prevent a spread of the blaze and put as early stop to the flames as possible could have resulted in the catastrophe. He said he was sure that Captain Cawthon did not know of the order.

A Fireman's Miraculous Escape

One of the men who were on top of the wall when it went down and who miraculously escaped, described his experiences as follows: "Lieutenant Fleming and I were on top of one of the walls when it went. We had no warning as the collapse was sudden. We were standing on top and the only thing we could do was to fall with the wall, having no time to jump. The few seconds that the wall was dropping seemed like all eternity, but we finally hit the ground, in what position I do not know. Lieutenant Fleming began hunting in the debris for the men that we knew were directly under the wall, but my hands were too badly injured to aid him much. In a few seconds other firemen arrived to help him."

Second Fire with Loss of Firemen's Lives

This is the second fire that has taken severe toll of Atlanta's firemen. On May 6, 1925, at a fire in the Jass Manufacturing Company's warehouse, the second floor collapsed from soaked cotton bales, and six men lost their lives. At the time of this fire, it is thought by members of the department, that Captain Cawthon may have had a premonition of his end, as he remarked, "Well, boys, we never know who will be next. We never can tell. Of course, nobody knows, but I may be the next one to go."

Captain Cawthon was to have begun his vacation on the day he lost his life. Referring to his coming leave of absence on the day before, the young officer said: "Watch out for a big fire tomorrow, I'm due to go on my vacation and I've never known it to fail yet that a fire broke up my vacation plans. My vacations for the past few years were ruined by big fires on the day I was to start my leave. Take last year, for instance, the Fox Manufacturing company fire broke out just as my leave started and broke up my plans."

Captain Cawthon had been a member of the Atlanta Fire Department for 16 years. He was made a lieutenant in April, 1926, and a captain in December of the same year. Private Richardson had been connected with the department for about three years.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands.

Week Ending July 29

WINNIPEG, MAN.—Bldg. of Midwest Grocery Ltd..... 65
ALEXANDRIA BAY, N. Y.—Town Hall in James Street..... 25
TORONTO, ONT.—Bldg. of Canadian Furniture Mfgrs. Ltd.... 200
DALLAS, TEX.—Loew's Melba Theatre damaged..... 170
STAUNTON, VA.—Bldg. of Central Garage Company..... 30
CHATTANOOGA, TENN.—Business bldg. 718 Market St..... 40
OSAGE, (mail Morgantown) W. VA.—Business establishments 80
GATES MILLS, O.—Residence of H. W. Brandt destroyed.... 40
MIAMI, FLA—Former Carl G. Fisher boat slips..... 40
NASHUA, IA.—Bloom Mfg. Co. plant destroyed..... 30
CORNVILLE, ME.—Property of Mrs. G. Neal, E. Ridge Rd.. 25
SHELBYVILLE, IND.—Tindall-Wagner Furniture Plant..... 40
OGEMA, WISC.—Telephone exchange and adj. property..... 30
LOS ANGELES, CALIF.—Cecil B. DeMille Studio damaged.... 125
M'PHERSON, KAN.—Bldg. of Curtis Motor Co..... 60
WILLIAMSTOWN, KY.—Needham Block damaged..... 40
LAPIER, MICH.—Three business bldgs. destroyed..... 40
ALBANY, N. Y.—W. T. Grant and adj. stores..... 200
TOLEDO, O.—Yards of Mauk Lumber Co..... 65
VANCOUVER, B. C.—Plant of Alberta Lumber Co..... 80
LOS ANGELES, CAL.—Moore Paint Shop, 31st & Vermont Sts. 25
NEW ALBANY, IND.—Main plant of National Chain Co..... 100
ELLISVILLE, MISS.—Warehouse of Cash Wholesale Grocery.. 40
ST. GERARD, QUE.—Brompton Pulp Co. and adj. property... 40
PINE BLUFF, ARK.—Saw mill of Jerome Lumber Co. destroyed 165
CHICAGO, ILL.—Chicago Mill Paper Stock Co. damaged..... 125
GOVAN, WASH.—Several warehouse and adj. property..... 80
MASSILLON, O.—Plant of Fulton Drop Forge Co..... 70
WILCOX, PA.—Knox Glass Bottle Co. plant destroyed..... 40
FOREST, O.—Penna Station and property adjacent.....125
MONTAGUE, CALIF.—Algoma Lumber Co. box factory..... 40
CHICAGO, ILL.—Store of Goodman Shirt Co., S. Halsted St... 40
TROY, N. Y.—Plant of Troy Fireproofing Co..... 30
CHILOQUIN, ORE.—Williams Lumber Yard and adj. property. 80
SOURLAKE, TEX.—Oil tank of Gulf Refining Co. destroyed... 170
SALISBURY, MD.—Warehouse of Disharoon Company..... 30
WARDSVILLE, MO.—Roman Catholic Church damaged..... 35
SAN ANGELO, TEX.—Plant of San Angelo Refining Co..... 40
SANTA CRUZ, CAL.—Business establishments damaged..... 50
SARNIA, ONT.—Plant of Sarnia Bridge Company..... 25
MEMPHIS, TENN.—Warehouse of Maury-Cole Co. damaged... 40
ELECTRA, TEX.—Barns of W. T. Waggoner Racing Assn.... 180
VERNON, CAL.—Jack Doyle's old Vernon area damaged..... 150
GOVAN, O.—Warehouses and business establishments..... 80

Week Ending August 5th

BUFFALO, N. Y.—Bldg. and contents, Main & Summer Sts... 40
MINNEAPOLIS, MINN.—Crown Elevator Company bldg..... 200
N. GRAFTON, MASS.—Ice houses of Boston Ice Company..... 60
TUTWILER, MISS.—Flowers business block destroyed..... 30
CHILOQUIN, OREG.—Business establishment and Cochrane Hotel 80
GREAT FALLS, MONT.—Stanford Mercantile Store destroyed.. 40
PATERSON, N. J.—Lamond & Robertson Rug Plant damaged.. 40
ZANESVILLE, O.—Weller Pottery Co. plant destroyed..... 450
LANSING, MICH.—Clothing store of Abbey & Walters..... 40
OLYMPIA, WASH.—Warehouses of Springer Company destroyed 80
QUINCY, ILL.—Barn of Putz & Cissna, 419 Broadway..... 25
N. STAMFORD, CONN.—Plant of Varuna Spring Water Co..... 25
TENINO, WASH.—Mill operated by T. Johnson and F. Clark.. 40
WAYCROSS, GA.—Exchange Hotel and adj. property destroyed 170
CRYSTAL SPRINGS, MISS.—Six buildings destroyed..... 65
ADENA, O.—Tipple at Summers Mine of Goodyear Tire & Rub. Co. 40
SWISSVALE, PA.—Plant of Vesuvius Crucible Co. damaged... 40
FORT BRAGG, N. C.—Regimental Headquarters' Garage..... 30
YORK, PA.—Plant of Hubley Print Co. damaged..... 40
BRIDGEVILLE, PA.—Garage of Colussy Motor Co. destroyed.. 125
BRONX, N. Y.—Warehouse of Bronx Grocery Co..... 80
WICHITA, KANS.—Golden Rule Refining Co. property..... 80
BROADWAY, VA.—Plant of Hardwood Co. destroyed..... 80
JOPLIN, MO.—Mill of Empire Development Co..... 75
MANCHESTER, N. H.—Residence of Victor Charas destroyed.. 25
LOUISVILLE, KY.—Kennedy-Shrader Motor Co. Warehouse... 80
BAYONNE, N. J.—Factory of Nathan Rankin, W. 22nd St.... 25
CURRIE, TEX.—Currie Hotel destroyed..... 25
VICKSBURG, MISS.—Oil and barges valued at..... 600
MATTYDALE, N. Y.—Barn of J. M. Kirsch destroyed..... 25
BROOKFIELD, N. S.—Store of A. D. Benjamin destroyed..... 25
RICHMOND, Va.—Roundhouse of Chesapeake & Ohio R. R..... 35
TUTWILER, MISS.—Several business establishments..... 30
SPENCER, N. C.—Linlock Furniture Store damaged..... 30
HOLLYWOOD, TENN.—Hollywood High School Bldg..... 100
MEMPHIS, TENN.—Warehouse of Embry A. Anderson Mill.. 40
WILLIAMSON, W. VA.—Home Steam Laundry plant..... 60
TENINO, WASH.—Lumber mill of Johnson & Clark destroyed. 40

Tractor Saves Property at Oil Fire

A caterpillar tractor was used at Seminole, Okla., to cut down the damage resulting from an oil fire. While the well was belching forth clouds of dense black smoke, the caterpillar tractor snaked its way about the the plant and removed a large amount of material that was in the path of the flames. It was not long before the flaming well was extinguished.

CHARLES W. GEIGER

New York Changes Examination Rules

The municipal Civil Service Commission of New York city has made a number of changes relative to the examination for promotion to captain in the fire department. The ratings will be based fifty per cent on the mental examination while record and seniority will be rated the other credits. In the mental examination, administration will be rated six, laws and administration, two, rules and regulations, one and reports, one.

Additional credits are also allowed to the holders of the various merit awards of the department and for the service record. Credit is also given to veterans of the Spanish and World Wars and the Boxer Uprising in China. For every month of service in the army, navy or marine corps during a war, 0.1 of 1 per cent is added to the rating but in no event shall the rating from this source be more than one per cent. For participation in battle, 1.5 per cent is added. Additional credit is also allowed for the various decorations of the war and navy departments.

Deductions from the rating are made for each day's fine after July 1, 1924; fines previous to July 1, 1924 not to be considered but reprimands count as one-half of one day's fine.

Threatens to Overrule the Chief

William Glass, finance commissioner of Fresno, Cal., criticized an increase asked for by Chief Baird, of the fire department, in considering the annual budget of the city. He declared heatedly that the fire underwriters have had the city under their thumb long enough and he is about ready to call their "bluff."

A finance expert, called in by a taxpayers' association claimed that Fresno is spending more money per square mile of protected area and more per capita than any other city of similar size in California. Chief Baird had to answer a battery of questions because of the budget increase of $8,825 that he asked to run his department. A large amount of the money was required for a new fire hose and automobile replacements. The taxpayers' committee favors a decrease in the amount of the budget, and a suggestion was even made by the finance commissioner that one of the fire stations be abandoned. Chief Baird agreed with the latter suggestion but stated that the company should be installed in another part of the city. The chief warned that any cut in the department or appropriation would probably increase the fire insurance rates. This caused Commissioner Glass's assertion that he is ready to call the "bluff" of the Pacific organization to see if they can increase the insurance rates.

Sacramento, Cal., Raises Firemen's Pay—Beginning January 1, the pay of the members of the fire department will be increased. The chief's pay will be increased $25 a month, first assistant chief, $25 a month, second assistant chief, $35 while the firemen will receive an increase of $7.50 and will receive a like increase the following year.

Chicago Fire Apparatus Stolen—Three men clad in firemen's raincoats approached the lone watchman in Engine Company 39, a new fire station in Chicago, and said that there was a fire and that they were going. They bound the watchman and carried him to the cellar. They picked out the largest apparatus before they started on their way. About an hour later, the watchman freed himself and notified Chief Seyferlich, and after a lengthy search the apparatus was found at the rear of another station. It is believed that this is the result of some firemen's prank.

LOS ANGELES FIRE DEPARTMENT CONDUCTS EDUCATIONAL CAMPAIGN

Field Force Organized to Impart Information to Public—Men Selected from Uniformed Ranks for Work—Results Pleasing

By CAPTAIN E. W. WELTY,
Los Angeles, Cal., Fire Department

WITH no background upon which to base this new work, Chief Ralph J. Scott of the Los Angeles, Cal., fire department had to do some experimenting before he was able to bring his plan of imparting uniform information to the public, to its final conclusion.

In order to bring this about the Battalion Chiefs were notified to select two of their best men, taking into consideration their personal appearance, tact, force, and other qualities that go to make up a good salesman. These men were relieved from regular duty and assigned to headquarters for instruction. Approximately a month was given to schooling them in the essential points we wanted to impart to the public.

At first they were confined to a prepared talk embodying these paramount features: Introductory remarks; their mission; location of nearest fire alarm box; how marked for easy identification; could time be spared for instruction on how to call the department in case of fire; at first signs of fire immediately proceed to fire alarm box; break glass in door by using knife, key ring, vanity case, stick, rock or anything at hand; pull hook or projection down *once* and then release; wait at box to direct firemen to location of fire; proper manner of reporting fire by 'phone; use of dial and manual 'phone; how to transmit call in the dark to report fire, or prowler about premises to police department; necessity of being calm; complete information as to house number, name of street, whether north, south, east or west, or whether avenue, place, drive or street; nature of fire as to whether grass, automobile or dwelling; not to leave 'phone 'till fire department has all information desired; most fires preventable; leave pamphlet containing common causes of fire such as children playing with matches, carelessness with matches in smoking or in disposing of lighted cigars or cigarettes, burning trash or rubbish near a house or fence instead of in an approved incinerator, leaving electric irons turned on while away, bridging fuses with coins or wires, amateur electric wiring, gas stoves or heaters connected with rubber hose, rubbish allowed about premises, fireplaces or open flame heaters not protected with screens; cite many cases of women or children burned severely, sometimes fatally by clothes igniting from flames of this kind; advise against use of gasoline or benzine for cleaning clothes and substitute non-inflammable cleanser; Fire Prevention Bureau attends to inspection of all buildings and enforcement of fire ordinances; emphasize 'phone number of fire department and write location of nearest fire alarm box on pamphlet.

After these salient points were understood to the extent that each man could carry his story through in logical sequence, they were told to forget their "speech" and allow their personality to enter into the delivery of their message, only remembering to confine themselves to their one mission. They were also admonished against attempting to interpret fire ordinances or to point out fire hazards, as this was the duty of the Fire Prevention Bureau.

Although Chief Scott felt the urgent necessity for such a campaign, he did not know what the reaction of the public would be. In order to determine this he decided to send the full detail into one section of the city to test out his program. This he did, and the results brought back at the close of each day by these men exceeded his expectations. In almost every instance the citizens were greedy for the information our men were imparting and wondered at their ignorance. With such reports coming Chief Scott ordered the campaign to spread out over the entire city.

The following is a summary of the organization plan which was put into operation by Chief Scott:

At present the fire department has two tasks before it, namely,

1—The education of the Public in regards to reporting fires.

2—A contact with the voters that will result in benefit to our department when matters of interest to us appear for their approval.

The second consideration should not be treated as a main issue, but it should follow in the wake of our educational activities as naturally as day follows night.

In the city-wide program the work took on several new phases of which the following is a summary:

1—Publicity by means of an established news service and pictures to the daily and suburban newspapers, (at regular intervals) radio broadcast stations, etc.

2—Men now concentrated in one section to be assigned to Districts in which they live, to speak before Improvement Associations, P. T. A. groups, Boy Scouts, Camp Fire Girls, schools, various clubs, lodges, etc., and to form contact with newspaper men and other influential citizens.

3—Every fire station to be supplied with a model fire alarm box and have at least two men on each shift qualified to impart educational message to public. Publicity campaign to urge that citizens visit the nearest fire station and bring their families for this instruction. At all times when these men can be spared they are to go from door to door in their particular hydrant district and impart this educational message.

The work is based upon the following organization plan which has the chief engineer at the head. A captain who has charge of sixty-five separate fire stations is directly responsible to the head and he has supervision of ten districts.

In the next article, there will be a detailed summary of this plan in operation which has enabled Los Angeles to reach thousands of the people every month. Undreamed of cooperation has developed.

Many Subscribers Pass Examinations

Of the 107 firemen who have passed the examination for lieutenants and captains in San Francisco, Cal., a large number of the men are subscribers to FIRE ENGINEERING, and have benefited from the instructive material published. On the list of those who passed are thirty-seven prospective captains and seventy prospective lieutenants. In the list of those who passed, an asterik (*) indicates a subscriber to this journal.

The list of captains includes:

John J. Brady, William J. Smith, Victor E. Bertucci *, Gustave E. Nelson, Philip A. McCormack, Joseph A. Fitzpatrick, Joseph R. McKeon, James Fitzpatrick *, Albert C. Derham *, William L. Leischenring, Henry J. Wolf*, John C. Murphy, Joseph H. Miller*, Edward O'Dowd*, John O. Larson, Thomas E. King, John E. Bray*, Lawrence J. Dwyer, William Van Dervort, Edward M. O'Donnell, Henry C. Kolby, Erwin G. O'Meara, Melville S. Munter, Walter J. McKennus, Henry Dierrmann, Carl F. Kruger, John J. Hartford, Jeremiah A. Riddell, Adolph P. Penebsky, Frederick E. Jones, Frank W. Theobold, John T. Gaffney, Charles E. Lennon *, Cornelius C. Sullivan, Hugh J. Carr, Angel F. Soto and Victor C. Dupuis.

The list of lieutenants includes:

Richard P. Washington *, John J. Howard, Thomas F. Webb *, Albert A. McGuire*, Edward P. Walsh, Joseph F. Kane, Lester L. Black, Arthur C. Linsted, Roy O'Connell, Charles T. Collins, Jr., Frank F. Bustin, Timothy J. O'Shea *, William H. Smith, Emil Smith, John J. Reardon*, Benedict J. Newel, John L. Pruyn, John A. Cafferty, Daniel P. Connolly *, John E. Rose, Oscar A. Oakes, Henry G. Pengel*, John P. Crowley, Frank A. Drewes, Frank M. Deasy, Edward M. Coghlan, Berth H. Dever, Joseph P. Zils, Frank J. Earley *, Bruno Bandoni, Harold G. Willis, Edward J. Auberlin, George A. Shaughnessy *, Frank L. Andrews, Henry J. Casper, James Horan, George B. Vivian, Louis E. Sullivan, Peter J. Maloney, William F. Murray, James J. Kelly, Robert J. Allen, Lawrence H. Casserly, John D. Hart, Godfrey Larson, Frank A. O'Brien *, Otto B. Metz, John F. McCook *, Melville H. Miller *, James R. Gayin *, Oscar F. Postel *, John F. McElearney, John M. Wall, John Koster, Andrew J. Claucy, George Maegling, Edward F. Jake, Thomas F. Ryan *, Francis J. Pierce, Charles J. Egan, Alexander Strang, Clarence J. Dunleavy, Dante, J. Darini, Joseph F. McCarthy, Ralph M. Pierini *, William Hillebrandt, John T. Hutchinson*, George L. McGraw.

Massachusetts Firemen to Meet at Salem

The forty-eighth annual convention of the Massachusetts State Firemen's Association is to be held at Salem, Mass., on September 13 to 15, with headquarters at the Hawthorne Hotel. The first session will be called to order by President Jeremiah F. Sullivan at 2:30 p. m., on Tuesday, September 13, at Now and Then Hall.

The convention committee of the association, with the active cooperation of Chief Howard C. Kimball, of the Salem Fire Department, and his local committees, is now actively engaged, according to Secretary Daniel J. Looney, in the preparation of an unusually instructive and interesting program, which will include very enjoyable entertainment for the ladies who attend.

An earnest effort is being made, Mr. Looney writes, to secure the very best speakers available for the various subjects of interest to firemen.

The association now has a membership of 8,300, and its aims are to promote social intercourse, mutual assistance, cooperation, protection and improvements in conditions for the firemen of the commonwealth. The association now has about 32 children whose fathers died in the fire service to whom the association is paying a benefit of $2 per week from the reserve fund. The association is also giving assistance in other ways.

GOVERNING STORING AND HANDLING OF EXPLOSIVES BY ORDINANCE

Some Suggestions Contained in the Laws of Oakland, Cal.—Safeguarding Measures Afford Safety to Communities

By BATTALION CHIEF FRANK C. KISPERT
Fire Prevention Bureau, Oakland, Cal.*

THIS is the conclusion of a paper by Chief Kispert, begun in the June 1 issue of FIRE ENGINEERING:

Due to laxity in shipping and receiving explosives for shipping by water and for failure to notify the proper authorities on receipt of cargo of explosives, it has been necessary for us to enforce the following, to properly safeguard our commercial interests.

Explosives, Combustibles, Inflammables, etc.

(a) No gunpowder nor other explosives shall be discharged from or loaded from any wharf or structure, vessel, barge or other floating equipment within the corporate limits of the City of Oakland. Nor shall any vessel, barge or other floating equipment carrying gunpowder or other explosives, at any time be permitted to anchor or remain in any water area or channel, nor be tied, moored or otherwise made fast to any waterfront structures within the corporate limits of the City of Oakland. Explosives meant herein are defined in paragraaph 1503 of the Regulations of the Interstate Commerce Commission for the transportation of explosives. These are quoted and referred to in the Federal Rules and Regulations on "Anchorage Grounds" and published in "Tariff Changes," Port of San Francisco, effective December 1, 1925.

Anchorage Area No. 13.—Explosives Anchorage has been set aside and designated by the United States District Engineer, San Francisco, as the official area in which explosives may be handled in San Francisco Bay District. The enforcement of the Federal rules and regulations referred to are under the jurisdiction of the Captain of the Port, San Francisco, Calif.

The adoption of the above safeguading measures should afford any community a wide measure of safety for its citizens and elasticity enough to allow business to be done without seeming unduly drastic.

* From a paper read before the annual convention of the Pacific Coast Association of Fire Chiefs at Fresno, Cal.

Properties of Carbon Monoxide

An expert chemist recently had this to say as regards the properties and hazards of carbon monoxide gas, from the standpoint of the fireman:

Carbon monoxide is a deadly gas which results from incomplete combustion of the carbon in wood and other materials. This is one of the gases which come from the exhaust of an internal combustion engine and has proven fatal in so many cases. If a man absorbs enough of the gas he becomes unconscious, with locked jaws and rolling eyes and his blood takes on a sort of cherry color. Death may result at the time or a day or two later. A moderate dose will often cause nausea and sick headache and may result in a weak heart unless the gas is quickly removed from the blood.

The gas is odorless, tasteless and invisible and a trifle lighter than air. When pure it burns with a blue flame, as seen in a coal furnace but with oxygen or air in proper proportions it forms an explosive mixture. It is not easily detected and men are even overcome before they realize that anything is amiss or before they are able to reach a place of safety. Nearly all cases of smoke suffocation are caused by the inhalation of this gas which is said to be responsible for more deaths than all other gases combined. Poorly ventilated rooms, basements or attics sometimes become filled with the gas during a fire. Men are often overcome on entering such rooms or attics, and in some cases the fire, on reaching such accumulations of gas, causes an explosion which is commonly known as "back draft."

Being lighter than air, ventilation should be provided at or near the roof or ceiling and additional ventilation at the floor level will permit a current or draft which will quickly clear away the gas. Thorough ventilation will help to keep the danger to a minimum and firemen should not be sent into any poorly ventilated smoke enclosure or basement unless equipped with a smoke mask specially made for carbon monoxide, or a self-contained oxygen helmet.

This gas is apt to be encountered at a fire in any enclosed or poorly ventilated place as it is produced by the fire itself.

NECESSARY TO COMBINE SCIENCE WITH PRACTICAL WORK METHODS

Plans Made for Holding Short Course for Fire Fighters at Ames, Ia., in Fall of Year—Both Science and Practice Taught

By S. E. MATHENY *

THINK hard for just a few moments and get in your mind what two wonderful words "Science" with "Practice" mean when applied to fire departments. I will go further and state, not only to fire departments, but these two words apply to every vocation, and in all walks of life, Science with Practice, in my estimation, is supreme, in accomplishing results.

When one sets out to reach a goal without Science or Practice, he is lost. The day is gone when things are done in a makeshift or haphazard manner. A new day has dawned. When things are done scientifically, the operator is an expert, because he is educated. When he applies his scientific methods in attaining his object, he will reach his goal, because he knows and understands.

All the fire chiefs and the majority of firemen are looking forward with interest to the third short course for fire fighters, to be held at Ames, Iowa, sometime this fall. How greatly these two words, "Science" and "Practice" will hold supreme at this next meeting! The brains of the fire departments will be there. To some who may not understand why I say, "the brains of the fire departments will be there," I mean the fire chiefs. They will be there to get new ideas, new methods, to study and to hear talks by efficiency experts at the College and get ideas from chiefs of neighboring towns and cities, who scientifically put out fires.

This course is not only for fire chiefs but for firemen. Firemen learn through education how to manipulate the apparatus, how to scientifically lay lines of hose, and with practice, they become efficient.

Addresses were made last year by men such as Harry J. Corcoran, chief engineer Iowa Insurance Service Bureau of Des Moines, Iowa. His subject was "Characteristics of Fire Streams." Mr. Corcoran has had the experience. His methods are scientific. J. A. Tracy, State Fire Marshal of the State of Iowa, gave an address on the "Fire Hazards in Iowa." Mr. Tracy is a man whose methods of fire prevention are based solely on science, and no guess work along these lines for him. Chief Ray Tiller of Waterloo gave a splendid talk on "Training for Firemen, and Efficiency." J. E. Florin, superintendent of Fire Prevention Industrial Commission of Wisconsin, also gave a very instructive talk along fire prevention activities, so Iowa is very proud of its short course for fire fighters.

Asst. Chief Warren Taylor of the Des Moines Fire Department, is also a very much interested party in the Ames Short Course, and his talks are along scientific lines, and very interesting.

The exact dates that the Ames College will set for the short course for fire fighters will be announced later. The heads of the departments are looking forward to a larger attendance this year and hope, through their efforts to minimize fire loss in the future. This can be accomplished by applying "Science with Practice."

* Des Moines Manager, Eureka Fire Hose Manufacturing Company.

New York Short of Hydrants

Certain areas in the mid-town section of New York city are not protected with the proper number of hydrants according to a report issued by the New York Board of Fire Underwriters. In some sections only a 6-inch main is used, and while the maps in the office of the Department of Water Supply show a certain number of hydrants, when conditions were checked up in the field, it was discovered that some of the hydrants had been removed on account of construction work and had never been replaced. Maps showed a number of hydrants in the area about Grand Central station which could not be located.

Kingsley, Ia., to Purchase Equipment—Kingsley, Ia., will purchase new fire apparatus.

Survey Being Made of N. Adams, Mass.—Chief Saulnier of North Adams, Mass., is making a survey of the fire hydrants and he is considering plans for better fire protection.

Boston, Mass., May Erect New Station—Plans are being considered in Boston, Mass., for the erection of a new fire station to cost about $100,000. Chief Sennot is actively engaged in the materialization of the new plans.

OF INTEREST TO VOLUNTEER FIRE DEPARTMENTS

SHUT-OFF NOZZLES SHOULD BE HANDLED WITH ADEQUATE CARE

This Appliance Is Valuable if Used Properly, but Otherwise May Result in Some Damage—Should Not Be Closed Suddenly

WITHOUT a doubt, one of the most common types of nozzles in use by the volunteer department, and perhaps the least understood, is the shut-off or controlling nozzle. They are used with small sized tips and are common equipment for chemical lines.

They consist of a handle, which when moved to one position closes the passage through the nozzle so that the stream is shut off—by moving the handle to the other position, the valve is open and permits the water to flow through. The proper use of this type of nozzle will result in the reduction of the water damage at a fire, as it is not necessary to relay signals back to the one at the pumper to shut off the flow of water. However, the improper use of this nozzle may cause a coupling to blow off so that a fire line is placed out of service.

When a shut-off nozzle is suddenly closed down on the flow of water, a "dynamic" pressure is produced. When this is done very quickly, this pressure may be many times as great as the pressure under which the line was normally operating so that "water hammer" is set up. This condition is often the cause for bursting hose.

Experiment on Water Hammer

The New York Fire College instructs the men "under no condition should the valve be closed suddenly, as the shock thereby produced in the hose is frequently sufficient to burst the jacket or blow the coupling off.

"In order to demonstrate the effect of quickly closing the valve of a shut-off nozzle, the New York Fire College performs an experiment which demonstrates beyond question the danger of this practice. A length of 2½-inch hose is attached to a hydrant to which a pressure gauge is placed. The line is equipped with a 1⅛-inch nozzle. With the nozzle open, the water is allowed to flow and the gauge records twenty-five pounds. After the water has been flowing a few seconds, the valve is instantly closed. The pressure at once jumps to nearly ninety-five pounds at the hydrant. This pressure rise is only for an instant, but sufficiently long to burst the hose or blow off the coupling on the hose, where the hose is not able to stand it."

The greatest pressure is created if the valve is shut-off instantly, and the pressure is less where the valve is closed gradually.

To determine roughly the pressure created by suddenly closing the valve, the following rule is used: pressure equals five times the velocity of the water in the hose (measured in inches per second).

As an example of what the pressure may amount to let an assumption be made that the pressure at the nozzle is one hundred pounds. If a 1⅛-inch nozzle is used, the maximum pressure in the hose which can be produced by instantly closing the valve will be 1,540 pounds per square inch.

Should a 1¼-inch nozzle be used with the same nozzle pressure of one hundred pounds per square inch, the pressure in the hose will amount to 1,900 pounds.

Where fifty pounds pressure is used at the nozzle and a 1⅛-inch nozzle is used, the pressure created by suddenly closing the shut-off nozzle will be about 1,090 pounds per square inch.

However, the problems given are for a purely theoretical condition as it is impossible to absolutely close the nozzle at one time as some time is required to operate the handle. But the figures show what maximum pressure can be obtained from the misuse of the shut-off nozzle.

When fully opened, the shut-off nozzle has an open passageway from end to end so that the discharge of water can be calculated in much the same manner as an ordinary nozzle.

Resume of the Shut-Off Nozzle

As a summation of this subject, the shut-off nozzle should be used on all inside work. For very small fires the ⅞-inch nozzle will be found satisfactory, while for heavier interior fires, the 1¼-inch nozzle is needed.

For outside fires, when controlling nozzles can be used, the 1½-inch nozzle can be used to advantage.

In operation, the shut-off nozzle must be operated slowly—that is, it should never be opened or closed quickly. This will eliminate the shock that results from suddenly snapping the nozzle into position.

The larger the nozzle that is used, the greater is the damage that may result from the water hammer action.

Chief of Pella, Ia., Makes Good Report

Chief W. A. Van Wark, of the Pella, Ia., Fire Department, has been in the service of the city for twenty years as a fireman, and was appointed chief five years ago. He has just been reappointed by the council as chief for another year.

In his annual report he shows that the reduction in fire losses in the city for the past year amounts to over ten thousand dollars, or an amount equal to the cost of a new fire truck apparatus.

During the year past there were 10 fires to which the department answered. The losses of the ten fires were $1,535. The losses of 1925 amounted to $11,916.91, showing that the reduction of losses by fire the past year amounted to $10,381.91. The chief shows that the department were careful in handling fires so as not to damage the property contents of the buildings by too much water and to get to the scene at the earliest possible moment.

The report showed that the equipment of his larger truck amounts to $12,285.40, the Ford fire truck, $1,984.15 and the equipment of the fire station $437.40, a total investment of $14,706.95.

New Apparatus Delivered to Brockton, Mass.—Seagrave fire apparatus has been delivered to Brockton, Mass.

John Bolan, Toledo Fire Marshal—John E. Bolan has been appointed fire marshal of Toledo, Ohio. He succeeds John Manley who died recently.

Oakdale, Cal., Chief Gets Pay Increase—Chief Bailey of Oakdale, Cal., has been granted a salary increase as the result of a petition signed by the business men of the district.

Seagrave Ladder Delivered to Sound Beach—A Seagrave ladder truck has been delivered to Sound Beach, Conn. It is equipped with a flood lighting system and a forty-gallon chemical tank.

How Volunteers Stopped a Fourth of July Fire With No Water, After a Mile Run

After a mile run into the country on a telephone alarm, the Mountain View, Cal., Fire Department, under command of Chief Edward Demezzi, found the porch roof of this residence on fire, evidently from fireworks, and no water in sight. The job of extinguishment, as shown in the picture, was accomplished with two 35-gal. chemical tanks, an 85-gal. booster tank of an American-LaFrance pumper, plus some hard and quick work on the part of the department.

William L. Knight, of Eureka Hose, Dead

"Uncle" Bill Knight is no more! His hundreds of friends throughout Georgia will only have a pleasing memory as a substitute for the genial comradeship of a man who was well known to the various fire department officials. He died at the age of fifty-seven in the Davis-Fischer Sanitarium at Atlanta.

William L. Knight was both a native and a resident of Cedartown. For twenty years he was connected with the Eureka Fire Hose Company operating from the Atlanta Office. He was widely known everywhere and to those who were fortunate to have an intimate acquaintance with him, he was just "Uncle" Bill.

Mr. Knight was a member of the Masonic order of Cedartown and of the Atlanta lodge B. P. O. Elks. He is survived by a brother, two sisters and several nieces and nephews. Funeral services and interment were held in his late home town, Cedartown, Ga.

Hazards of Domestic Oil Burning

(*Continued from page* 850)

The oil burner has been removed and the use of coal resumed.

7. A leaking fitting allowed oil to flow into bottom of heater where gas was generated and a slight explosion caused. No damage resulted from smoke. Fire was extinguished by fire department.
8. Flare-back was probably due to improper operation of automatic governor, which allowed more oil to pass than could be properly consumed. Oil and gas collected in fire box in sufficient quantity to cause a slight explosion.
9. An unapproved equipment, using a 10-gallon tank for oil supply, the flow of oil being regulated by air pressure created by hand-pump, was in use. In the bottom of the heater a pan had been placed to catch oil leaking from the piping. This oil became ignited when an attempt was made to start the burner and an explosion resulted. Fire was extinguished by fire department, with slight damage.
10. Fire was due to the accumulation of carbon in kiln, which caused incompletely atomized oil to run out on the floor. No damage.
11. Burner flooded with oil because of a lack of an automatic device and burning oil ran out onto the floor. This system is supplied by a 50-gallon drum, the flow of oil being controlled by air pressure. Fire department extinguished flame with slight damage.

Causes of Two Fires Near New York

To this may be added two fires in the vicinity of New York, one of which was due to failure of automatic cut-off valve to operate, and the other to pet-cock, which was left open, permitting oil to drain out on to cellar floor and thereby preventing the operating of the automatic cut-off valve.

In another instance, two burners were installed in a common combustion chamber; the flame of one was extinguished, and the result was incomplete combustion, due to excessive amount of fuel.

Protecting the Oil Burner Industry

These fires illustrate the points previously mentioned, but they mainly emphasize the necessity for municipal control. The problem presented by the varying grades of oil fuel supplied is a difficult one, the solution of which in the main depends upon the cooperation of the oil industry. The general standing of the oil burner men has been improved by the formation of associations to which the fly-by-night and conscienceless promoters are denied membership. These associations have in view the welfare of their industry and membership, and are consequently vitally interested in proper burner design, construction and installation. Unfortunately, many of these members are small concerns unable to maintain adequate service departments, or else they license individuals to handle and install their product. This condition is only another argument for efficient municipal control.

Flash Fire Tendency of Oil Principal Hazard

The burners being in connection with the furnace, the probable result is a cellar fire if anything goes wrong. Every fire chief recognizes the difficulty of controlling a cellar fire. In these cases, the seriousness does not result from the quantity of oil, as the amount generally involved is relatively small, but from the flash fire hazard inherent to oil. Expressed otherwise, it means that the ignition of only a small quantity on the cellar floor may immediately spread flame to the cellar ceiling, or other nearby combustible material—probably the coal bin. If this occurs, the fire will soon find its way throughout all non-fire stopped portions of the dwelling, and the chances are a total loss will result.

Control and Permits Should be in Hands of Chief

There is no reason why a municipality should not treat oil burning installations in the same manner as plumbing and wiring installations, or building operations. What is first needed is the enactment of an ordinance prescribing the necessary minimum requirements for construction and installation. Control should preferably be in the hands of the fire chief, and provision made for the issuing of a permit upon application and permission for operation only after personal inspection by the fire chief, or his authorized deputy.

As a suggestion along this line, the National Board has prepared an ordinance in tentative form based upon its installation requirements; this may well be used as a guide by any city.

There remains the necessity for determining if the burner intended for installation is safe from the standpoint of the fire hazard. The average city has not the facilities for making the necessary tests to determine this, hence it is advised that the ordinance permit the use of only such burners as have been found by examination and test to comply with the construction requirements of the Underwriter's Laboratories.

So controlled, the economic development of the oil burner can go forward with the assurance that the attendant fire hazards are not above the normal.

Smoke Blower Used in Grand Rapids

The value of a device for exhausting the smoke from the basement of a burning building, was completely demonstrated when the home made outfit was used in Grand Rapids, Mich.

"Smoke-Eater" in Action at Grand Rapids, Mich.

The device was made under the direction of Assistant Fire Marshal Fred Higgins from a discarded steam engine tractor on which was mounted a gasoline motor and a large fan. A 16-inch flexible jointed galvanized iron pipe is used for sucking the air up from the smoke-filled quarters. The pipe is made to telescope so that it can be used in cramped areas. At the point of exhaust, the air is moved with a velocity of 5,300 feet a minute.

The machine had an excellent tryout in a fire which occurred in the basement of a furniture store. Condition were such that it was impossible to enter that section of the building. When the fan was started, it was possible for a company to start fire-fighting operations, and in a short time the original direction of the fire which was upward, was diverted downward.

Outfits such as the one described can be easily constructed at very little cost.

Gamewell Elects Vice-Presidents

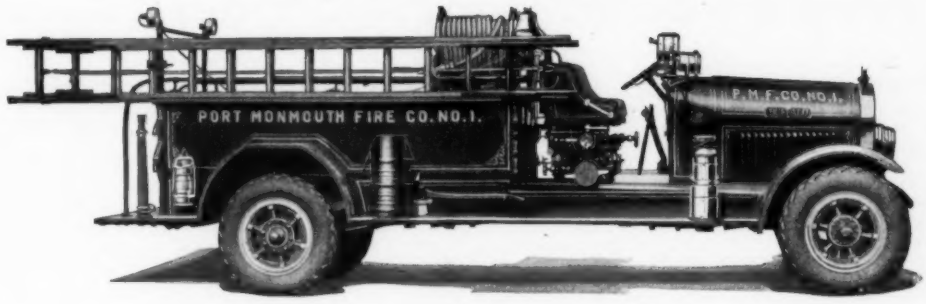
The Board of Directors of the Gamewell Company at a special meeting held in Boston on Friday, July 29th, elected A. D. Wheeler, district sales manager, Boston, and Arthur L. Tinker, district sales manager, New York, vice-presidents of the company. The directors conferred this honor on these men in recognition of their long and faithful service to the company.

Both men have been associated with the Gamewell Company for practically their entire lives, and are familiar figures in the fire alarm and police signaling field. Mr. Wheeler has been connected with the company for thirty-eight years, being at present District Sales Manager for the New England states; while Mr. Tinker's service record amounts to thirty-one years and his present position is that of District Sales Manager for the Middle Atlantic states.

Other officers elected at this meeting for the ensuing year are: V. C. Stanley, president and general manager; W. C. Beck, treasurer, and W. J. Miller, assistant treasurer.

Three Pennsylvania Towns Install Sirens—Three towns in the state of Pennsylvania recently installed Sterling siren fire alarms—Landisville, Witmer and Barron Hill.

Buffalo Type 50



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• • •

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We can do this because "Nott" engineers have been building fire department equipment for almost half a century and because quantity production and efficient manufacturing methods reduce our own costs to the minimum. We attach a fair profit to these costs and pass along the advantages of this combination to municipalities in the form of quality fire apparatus at a reasonable or lower than usual price. The "Universal" lines includes types for every requirement. Be sure to get complete information before you place your next order.

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A size for every town and factory.
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Water Meters - Chronometer Valves
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CONVENTION DATES

Aug. 9-11—CUMBERLAND VALLEY VOLUNTEER FIREMEN'S ASSOCIATION. 26th Annual Convention, Western Port, Md. Secretary, C. L. Jacobs, Waynesboro, Pa.

Aug. 9-12—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. 55th Annual Convention, Portland, Ore. Secretary Chief J. J. Mulcahey, Yonkers, N. Y.; Executive Secretary, State Fire Marshal Jay W. Stevens, Merchants' Exchange Bldg., San Francisco, Cal.; Chairman, Exhibit Committee, Chief Albert Herring, Murphysboro, Ill.

Aug. 14-16—NEW YORK STATE PERMANENT FIREMEN'S ASSOCIATION. Annual Convention, Elmira, N. Y. Secretary-Treasurer, Frank A. Emden, 1200 Lenox Avenue, Utica, N. Y.

Aug. 16-19—FIREMEN'S ASSOCIATION, STATE OF NEW YORK and WESTERN NEW YORK VOLUNTEER FIREMEN'S ASSOCIATION. Joint Convention of both associations. Niagara Falls, N. Y. Secretary, State Association, Fred A. Davis, Fort Edward, N. Y.; Secretary, Western N. Y. Association, Henry A. Clark, 21 Porter Avenue, Batavia, N. Y.

Aug. 19-20—CONNECTICUT STATE FIREMEN'S ASSOCIATION. 45th Annual Convention, West Haven, Conn. Secretary, D. W. Harford, South Norwalk, Conn.

Aug. 22 (week of)—NORTH CAROLINA STATE FIREMEN'S ASSOCIATION. Annual Convention, Greensboro, N. C. Secretary, John L. Miller, Concord, N. C.

Aug. 24-26—VIRGINIA STATE FIREMEN'S ASSOCIATION. 41st Annual Convention and Tournament, Alexandria, Va. Secretary, E. K. Landis, Pulaski, Va.

Aug. 24-27—CALIFORNIA STATE FIREMEN'S ASSOCIATION. Annual Convention, Stockton, Cal. Secretary-Treasurer, H. E. Strasser, 1171 Tenth Street, San Diego, Cal.

Sept. 5-7—COLORADO STATE FIREMEN'S ASSOCIATION. 11th Annual Convention and Tournament, Longmont, Col. Secretary, Clinton Turnbull, 303 Jacobson Bldg., Denver, Col.

Sept. 7—DELAWARE STATE FIREMEN'S ASSOCIATION. 7th Annual Conference, Rehoboth Beach, Del. Secretary, Sam H. Carson, Dover, Del.

Sept. 7-8—MISSOURI STATE FIRE CHIEFS' ASSOCIATION. 5th Annual Convention, Kirksville, Mo. Secretary, District Chief J. T. Lynch, Kansas City, Mo.

Sept. 7-8—MISSOURI ASSOCIATION OF FIRE FIGHTERS. 2nd Annual Convention, Kirksville, Mo. Secretary M. J. Mulvoy, 3500 S. Grand Boulevard, St. Louis, Mo.

Sept. 12-14—ARKANSAS STATE FIREMEN'S ASSOCIATION. Annual Convention, Russellville, Ark. Secretary, H. D. Compton, Little Rock, Ark.

Sept. 13-15—ILLINOIS FIREMEN'S ASSOCIATION. 40th Annual Convention, Jacksonville, Ill. Secretary, Roy A. Alsip, Champaign, Ill.

Sept. 13-15—MASSACHUSETTS STATE FIREMEN'S ASSOCIATION. Annual Convention, Salem, Mass. Secretary, D. J. Looney, 1046 Old South Bldg., Boston, Mass.

Sept. 20-21—IOWA STATE FIREMEN'S ASSOCIATION. 50th Annual Convention and Anniversary, Emmetsburg, Ia. Secretary, E. E. Parsons, Marion, Ia.

Sept. 22-24—NEW JERSEY STATE FIREMEN'S ASSOCIATION. 50th Annual Convention and Anniversary, Atlantic City, N. J. Secretary, William Exall, Chamber of Commerce Bldg., Newark, N. J.

Sept. 23—NEW JERSEY STATE FIRE CHIEFS' ASSOCIATION. Annual Meeting, Atlantic City, N. J. Secretary, Fred A. Trowbridge, 17 South Street, Morristown, N. J.

Oct. 4-6—PENNSYLVANIA STATE FIREMEN'S ASSOCIATION. Annual Convention, Shamokin, Pa. Secretary, Charles F. Clark, 411 Bellevue Avenue, Wayne, Pa.

Oct. 17-19—KANSAS STATE FIREMEN'S ASSOCIATION. Fortieth Annual Convention, Kansas City, Kans. K. D. Doyle, secretary, Wamego, Kans.

Oct. 17-19—KANSAS STATE ASSOCIATION OF FIRE CHIEFS. Eleventh Annual Meeting, Kansas City, Kans. Secretary, K. D. Doyle, Wamego, Kans.

May 7-10, 1928—NATIONAL FIRE PROTECTION ASSOCIATION (International). 32nd Annual Meeting, Atlantic City, N. J. Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.

Explosives: How to Handle Them

(*Continued from page* 848)

from such an experience although if very close the fragments of the shells will imbed themselves in the flesh.

Nitroglycerin

Nitroglycerin is a liquid of an oily nature, varying in color from a reddish brown to a light straw color, depending on its purity. It will sink in water and will freeze at 46° Fahr., in which condition it assumes the form of needle-like crystals. If one crystal is broken it will explode and will in turn explode all the other crystals. It never should be subjected to even the slightest blow nor dropped on any hard substance. It will seldom be found in concentrated form but under any circumstances it should be treated with the greatest care, and kept in an absolutely safe place.

Dynamite

Dynamite is a plastic substance of about the same constituency as common putty and resembling brown sugar in color. It is usually in sticks or cartridges 1¼ inches in diameter and 8 inches in length, although for special purposes the size of the sticks may vary. These sticks are covered with light brown paper spirally wrapped and paraffined. It is composed of nitroglycerin, fine sawdust and nitrate of soda, and is made in various strengths. It chills at 50° Fahr. and freezes at 46° Fahr. When in these conditions it is sensitive to shock or friction and should be handled with the greatest care.

Dynamite should not be placed in water as the nitro-glycerin will separate from the saw-dust and thus present all the dangers of liquid nitroglycerin. It should not even be thrown into large bodies of water such as a lake or stream, for some kinds of dynamite will not sink, and may later be picked up on shore by persons, who being ignorant of its dangers, may be injured by it. When it is fresh and in good condition for blasting it burns with a forceful yellow flame and a hissing noise. To ensure safety it should be kept in a dry place where the temperature will not fall to the chilling point, and in an isolated storage accessible only to authorized persons who understand how to handle it.

How to Destroy Explosives

It is sometimes necessary to destroy explosives that are either illegally stored or are not safe, due to deterioration or leakage. The only sure and safe way to destroy them is by burning. When destroying high explosives the sticks or cartridges should be removed from the cases and from the wrappers. Then in a safe place spread them in a thin layer on straw, paper, excelsior or other inflammable material. The wrappers should be burned at the same time and care must be taken not to make too deep a layer of explosives as the heat from those burning on top might explode those confined underneath. Saturate the layer with kerosene and ignite by using a trail of paper, or better, a trail of blasting powder and fuse.

In cases of large storages, where repeated burnings are necessary, do not build a second layer on the same ground as there may be sufficient heat remaining to ignite it before complete preparations are made. The cases should also be burned in the same way, taking the same precautions, particularly if they show any signs of having been in contact with the leaking ingredients. Blasting powder may be destroyed in the same way as that described for high explosives, and the same care should be observed to avoid a deep layer of the powder. It may be ignited by a trail of paper, a fuse or an electric squib. Blasting powder can be made non-explosive by immersing it in a large quantity of water until the soluble ingredients have dissolved.

Represents Eureka Hose in Northwest

The portrait of Roy E. Nelson, vice-president and sales manager of the Howard-Cooper Corporation, Portland, Ore., shown herewith, should have been included in the group of representatives of the Eureka Fire Hose Manufacturing Company, New York City, on page 792, of the July 27 Portrait Section, FIRE ENGINEERING.

The Howard Cooper Corporation are Northwestern representatives of the Eureka Fire Hose Manufacturing Company.

Roy E. Nelson

Fires Attack California Lumber

Lightning started a series of fires the end of July that have been ravaging through the forest preserves of the northern section of California and heading for Craker Lake, Oregon.

The government has asked that airplanes fly over the burning areas to make a survey of the situation. Volunteers in the Lessen, Shasta, Trinity and Klamath districts have been mustered into service to fight the flames and ranges have sent out calls for additional assistance.

Perhaps the largest of the conflagrations was reported from the Klamath district where a 2,500-acre swath was cut through a heavily wooded section.

Iowa Firemen to Meet in Emmetsburg—The fiftieth anniversary of the Iowa State Firemen's Association will be observed at the annual convention to be held in Emmetsburg on September 20-21. About one thousand delegates are expected to attend.

Maryville, Tenn., to Erect Headquarters—Plans are being drawn for the erection of a new fire headquarters in Maryville, Tenn. The station will be one story in height with provisions to add additional floors at a future date.

Jacksonville, Fla., Opens New Station—Station No. 10 was formally opened in Jacksonville, Fla., in the presence of many city officials. It is expected that a $35,000 bond issue will be floated to finance the construction of another station to protect the docks.

FIRE DEPARTMENT ACTIVITIES

Richboro, Pa., to Erect Station—Plans are being made for the erection of a fire station in Richboro, Pa.

Hudson City, N. J., to Have Station—A new fire station will be erected in Hudson City, N. J.

Pumper Delivered to Aberdeen, Wash.—An Ahrens-Fox pumper has been delivered to Aberdeen, Wash.

Swedesboro, N. J., to Purchase Apparatus—Swedesboro, N. J., will purchase fire apparatus.

Chester, W. Va., to Have New Station—A combined city hall and fire station will be erected in Chester, W. Va.

O'Fallon, Ill., Purchases Siren—A siren has been purchased by O'Fallon, Ill.

Dallas, Tex., to Erect New Station—A site has been purchased upon which will be erected a new central fire station.

Adel, Ia., Has New Pumper—A 500-gallon Pirsch pumper has been delivered to Adel, Ia.

Hartford, Conn., Places Headquarters in Service—Hartford, Conn., has formally accepted the new fire department headquarters building.

Four Washington, D. C., Captains Promoted—Four captains in the Washington, D. C., fire department were promoted to the rank of battalion chief.

Toronto, O., May Have Eight-Hour Shift—Toronto, Ohio, proposes to place the firemen on an eight-hour shift and to increase the force so that this arrangement will be possible.

Whiting, Ia., to Have New Station—Construction has started on the new fire station for Whiting, Ia. The town has recently received new fire apparatus.

Old Forge, N. Y., to Have New Apparatus—Old Forge, N. Y., has ordered a Foamite-Childs combination pumper with a foam generator costing $9,200.

Wisconsin Farmers Subscribe for Protection—Farmers about Sun Prairie, Wis., has subscribed $4,500 for the purchase of fire apparatus.

Lorain, O., Firemen to Meet August 17—The annual convention of the Lorain County Volunteer Firemen's Association will be held in Lorain on August 17.

San Francisco Opens New Station—A new station for Company 11 was officially dedicated in San Francisco, Cal. It is a two story building and houses two pieces of apparatus.

Anaconda, Mont., Has New Apparatus—A 750-gallon Seagrave pumper has been delivered to Anaconda, Mont. It is equipped with a forty-gallon chemical tank and costs $12,500.

Ponca City, Okla., to Have New Station—A bungalow type fire station of Spanish architecture will be erected in Ponca City, Okla.

Richmond, Ind., to Have New Station—The city council of Richmond, Ind., passed an ordinance to issue $40,000 bonds for the erection of a new central fire station.

Hamilton, O., to Have New Station—Legislation is being drafted for the erection of a fire station in Hamilton, Ohio, to cost about $25,000.

New Fire Stations for W. Jackson, Miss.—Contracts have been let for the construction of two new fire stations in West Jackson, Miss.

Imlay, City, Mich., Has New Apparatus—Imlay City, Mich., has received its new fire apparatus which was purchased at a cost of $6,000.

Atlanta, Ga., Opens New Station—A barbecue marked the opening of the new fire station in Atlanta, Ga. The station will add to the fire protection of the southern section of the city.

Chief A. G. Eidermiller, Dead—Chief A. G. Eidermiller of West Milton, Ohio died on August 1 after an illness which lasted ten weeks. Funeral services for the late chief were held on August 4.

Hudson, Mich., to Have Rural Protection—Boyer fire apparatus will be purchased for the rural protection of Hudson, Mich. It will serve a district within a seven mile radius of the city.

Port Huron, Mich., Selected for Convention—The 1928 convention of the Michigan State Firemen's Association will be held in Port Huron. J. L. Kresueberger of Saginaw was elected president.

Taps Fire Alarm to Send False Alarm—A 17 year old youth of Reading, Mass., was caught in the act of sending in false alarms of fire by means of a wire which he had tapped in to the fire alarm system.

Inspection Made of Norfolk, Va., Department—The city manager and Chief Alexander inspected the fire stations and apparatus of Norfolk, Va., and recommendations were made for the improvement of the department.

Three Departments Aid in Blackstone, Mass., Fire—Fire apparatus from Woonsocket, R. I., Millville, and Uxbridge went to aid the Blackstone, Mass., fire department check a blaze which destroyed a block with damage of $75,000.

Portland Rewarded for Old Fire Work—Three years ago, the Portland, Ore., fire department was called upon to fight a fire on one of the estates. Recently the pension fund of that city received a check for $100 in appreciation of the work.

Berkeley, Cal., Fire Loss Decreased—Berkeley, Cal., now has the lowest fire loss in the history of the city for the past seven years. The total loss was $20,000 lower than that for the year previous.

Alexandria, Ind., Chief Resigns—Chief Herman Swift of Alexandria, Ind., has tendered his resignation from the department. He expects to undergo an operation in Dayton, Ohio, for ulcers of the stomach.

Apparatus Purchase Defeated in Saratoga Springs—A measure to appropriate $60,000 for the purchase of fire apparatus was defeated in Saratoga Springs, N. Y. The measure was advocated by the Chamber of Commerce. Chief Shadwick has long advocated the erection of a new fire station.

Asbury, N. J., Makes Changes—All of the fire companies in the eastern section of Asbury Park, N. J., will be centrally located at headquarters on Asbury avenue and Main street. Chief Taggart said that the apparatus will be located a few blocks from the congested section.

Four Men Added in Great Falls, Mont.—Four men have been added to the fire department in Great Falls, Mont., in compliance with the state law which makes it mandatory to give the firemen one day off in eight. With the new men, there are now thirty men in the department.

Chief Haggerty Presented With Gold Badge—Chief George Haggerty of Berkeley, Cal., was presented with a gold badge by the officers and men of the department in honor of his new appointment. The badge is set with diamonds and was presented to Chief Haggerty by the city manager.

Long Beach, Cal., Adds New Station—After staying idle for a year and a half, the Peterson avenue station in Long Beach, Cal., has been officially placed in service with twelve men on duty. Acting on the recommendation of Chief Minter, the city manager added twelve men to the department in order to man the station.

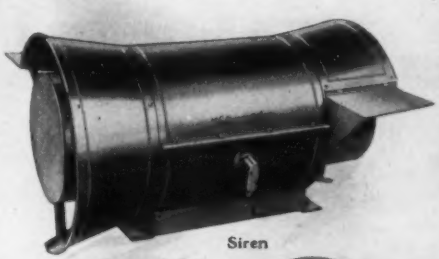
Oklahoma City Firemen Give Concert—Traffic was stopped for more than an hour in front of the fire station in Oklahoma City, Okla., at which the firemen's band was giving a concert. It is planned to hold concerts at all of the fire stations during the summer months, and to erect a portable band stand for the convenience of the musicians.

Sioux City Firemen Want $30 Pay Increase—The firemen of Sioux City, Ia., are still holding out for a pay increase of $30 a month which was approved by the vote of the people last year, and they refused to be satisfied with the $10 a month increase voted by the council. The city argues that there is not enough money on hand to warrant a $30 a month pay increase.

Apparatus Ready for Washington Forest Fires—An apparatus, owned jointly by the state of Washington and by the Washington Forest Fire Association is ready to answer fire calls in the western section of the state. It carries two sets of wheels, one of which enables the apparatus to ride on railroad tracks so as to approach the logging camps. It carries 4,000 feet of hose and has a 300 g.p.m. pump.

Pueblo, Col., to Have Volunteer Firemen—Plans have been made in Pueblo, Col., for a volunteer fire department of fifty men in addition to the present department. The new division will have its own captains and officers and will be drilled at regular intervals. Rooms in the headquarters station will be equipped as a gymnasium and club rooms for their use and will be for the exclusive use of the volunteer men. The new unit will be used in case of a general alarm fire. The complete organization will be made soon.

Holtzer-Cabot Fire Alarm Systems for Small Towns



Siren

Electric Sirens

Take the place of the antiquated bell or whistle for use in small towns as a fire alarm signal.

Will sound a general fire alarm or can be coded for location.

The Holtzer-Cabot Siren with its peculiar penetrating tone gives an understandable call for help.

It has a sound penetration radius of about two miles in ordinary weather conditions.

Write now for specifications.

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Manufacturers of Signaling Systems for over 50 years

THE HOLTZER-CABOT ELECTRIC COMPANY

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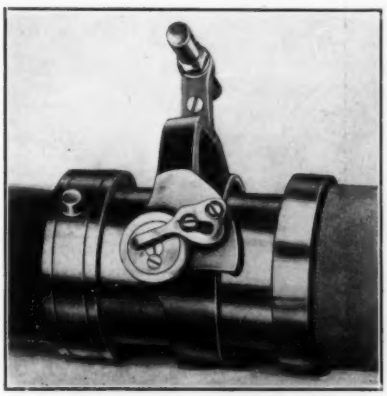
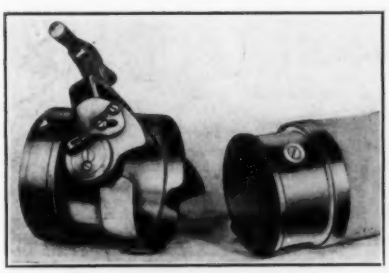
ALL HARD SUCTION PROBLEMS SOLVED

This new coupling instantly connects and disconnects any size hard suction hose. It is no longer necessary to use substitutes for Hard Suction. Every Fire Department can now utilize this superior method of fire fighting, through the installation of National Standard Threadless Couplings. With a spanner wrench, any fireman can install the National on any pumper in 15 minutes.



SPECIAL FEATURES

Sturdy Bronze Construction outlasts the apparatus—Simple to install—Any fireman can operate it—Eliminates delay—No lining up with hydrant—No threading or misthreading—No wrenches—No gasket-wear—Cannot leak, freeze or jam—No Thawing necessary—Guarantees positive, speedy connection and disconnection. Note friction proof roller lugs, connects and disconnects by a push of shift handle—Speedy operation saves time, labor and often lives and apparatus.



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The National Standard Threadless Coupling has been thoroughly tested under actual fire fighting conditions. Departments that equipped with Nationals five years ago report perfect satisfaction throughout all that time without a sign of wear or leak in this speedy, shift-connecting coupling. The National Unit is backed by years of exhaustive tests, and is manufactured under the supervision of experts in the construction of fire fighting equipment. The finest of materials combined with master workmanship make this new unit the outstanding feature of modern scientific fire fighting equipment. The National is guaranteed to give years of trouble-free service.

WRITE for descriptive literature as well as complete data on sizes, installment and service-tests.

Manufactured exclusively under patent rights by

National Standard Threadless Coupling Corp.

Threadless Couplings for Fire Engines, Oil Tanks and Trucks, Oilhose, etc.

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FIRE HYDRANTS

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NOTE—

The positive waste value.

All operating threads are dry, being above the stuffing-box.

No toggles, no small, quick-wearing parts.

All moving parts are bronze or bronze-bushed.

The outside casing permits replacing a two-way standpipe with a steamer and two-way standpipe without digging up the ground.

An easily installed
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CAST IRON PIPE
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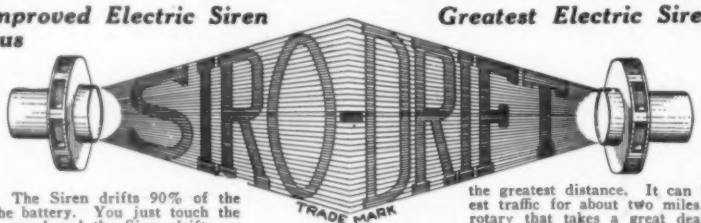
The New and Improved Electric Siren for Fire Apparatus

Greatest Electric Siren Ever Built for Fire Apparatus



SIRO-DRIFT

A Siren that will operate on one-tenth of the battery juice of any other electric Siren of its size. The Siren drifts 90% of the time without the aid of the battery. You just touch the Siren button for one-half second and the Siren drifts on for two or three minutes.

One-half second of current, applied means ten seconds running without any current, with plenty of noise—or two to three minutes at a slower rate of speed.

SIRO-DRIFT

Is 8 inches in diameter and gives the rising and lowering tones that carry the greatest distance. It can be heard through the thickest traffic for about two miles. Has a specially designed rotary that takes a great deal less power to drive than any other electric Siren.

We gladly ship a SIRO-DRIFT SIREN to any city on approval, transportation prepaid. Comes in three brackets—cross bar, on frame in front of radiator and under-the-hood.

Send at once for complete information

B & M Siren Manufacturing Co. LESTER H. MILES, *Owner*
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156 Chambers St., New York

D. A. Woodhouse, Pres. and Gen. Mgr. George J. Kuss, Vice-Pres. and Treas.

FALSE ALARMS

IT WAS JUST AS GOOD

Even firemen get a vacation, now and then. When Tom got his time off, he piled some old luggage in his ramshackled car and started for the open spaces of the west. It is too much to expect that tires will last on such a trip. In a rural village which boasted of a general store, one of his tires took a notion to expire.

So in the colloquialism of the department, he entered the store and inquired of the clerk, "What have you in the shape of a tire."

The clerk thought a moment and replied, "Funeral wreaths, life preservers, invalid cushions and doughnuts."

FULLY PREPARED

In one small city, the fire department consisted of a paid chief and a number of call firemen with paid drivers. A new fire chief was imported from among the officers of a nearby city. The local newspaper prepared a story on his appointment and secured a photograph to be used with it.

One of the aggressive merchants called at the newspaper editor's office and asked, "What is this new fire chief like?"

"He is twenty-nine, good looking and not married."

Calling up his store from the editor's office he said, "Hello, Miss Smith, put all the new hats in the front window right away."

REPORTING THE FIRE

Lady: Hello. Is this the fire department

Fireman: Yes ma'am.

Lady: Have you any fires?

Fireman: Not just now, ma'am, but I could get some.

Lady: No; I have one, thanks. That's why I called you up. It's quite a fire.

Fireman: Really?

Lady: Cross my heart.

Fireman: Well, well, well! Isn't that interesting. When did it happen, may I ask?

Lady: Just a few minutes ago.

Fireman: I'm glad you called up about it.

Lady: I thought you'd like to know. I could have called up any number of people but I rather thought the Fire Department would be the most interested.

Fireman: You did right, ma'am. We're always glad to hear about fires first—before they get to be common gossip. Where is this fire?

Lady: It's in the kitchen—wait until I look again, please—No, it's left the kitchen and is in the dining room now.

Fireman: Would you like to have us run over?

Lady: If you're not busy.

Fireman: Have you yourself tried fighting it?

Lady: I don't know what to do.

Fireman: They say cold water is very good.

Lady: How much water does it take?

Fireman: Well, it's hard to tell. No two fires are alike. The best way is to keep on using water until you get results.

Lady: Well, suppose I try it and if I don't have any success I'll call you again?

Fireman: Do that.

Later

Lady: Hello. This is the lady who called up to tell you about her fire.

Fireman: Yes ma'am. How is it getting along?

Lady: I can't do a thing with it. It's in the living room now and part of it has gone upstairs.

Fireman: Did you throw water on it as I suggested?

Lady: Yes sir.

Fireman: And you didn't get any results?

Lady: No sir. I'm afraid your company will have to come over and take it in hand.

Fireman: We're just finishing a pinochle rubber now but we can get over in about fifteen minutes. Can you make the fire last that long.

Lady: I'll do the best I can.

Fireman: All right. We won't be any longer than we can help.

Lady: Good-bye.

Fireman: Good-bye—*Boston Globe.*

"WE" READY FOR SERVICE

Possibly a one-man department may work in Putnam, Conn., and thereby save the taxpayers considerable money.

Chief Ralph E. Thurston's telephone rang and a voice stated that the flooring between the tracks was ablaze and that he feared that one of the box cars would catch on fire. As it was too far for him to carry water, he wondered if the chief would send some chemicals down. The chief said that he would.

The chief came down and opened the door of the fire station. In the upper part of the station were two men sleeping in total ignorance of the little blaze at the railroad. Quietly taking the fire truck, the chief went to answer the call. It was no trouble to put out the blaze, and when the chief returned with "we", the men were still sawing wood on the upper floor.

Radio controlled apparatus would be just the thing there!

An apple tree was the cause of a mysterious fire. Spontaneous combustion originating in the rotten part of the tree caused a blaze which placed a nearby building in danger.

A SIGN OF RANK

The class in fire department hydraulics was in session. After working out several problems on the blackboard, the instructor remarked that he would now give a test.

One fireman raised his hand and said, "I haven't got pencil or paper."

"What," bellowed the Instructor, "and you who are going to be a fireman, coming to class without your tools. What would you think of a soldier who went to battle without a rifle or ammunition?"

"I would think that he was an officer, sir!"

TOO MANY CURVES

A fireman of the local volunteer department was trained by the representative of the fire apparatus company in the proper manner in which to operate the pumper. Whatever mental ability he had is not part of the story, but his shape was such that it was all front and no sideways.

So when he was convinced that he could be placed in charge of the apparatus, he applied to the license clerk for an operator's permit.

"Sorry," said the clerk at the town hall, "but I can't give you a license until your form is filled out properly."

The volunteer fireman seemed troubled for a moment and then said, "All right. I'll take some setting-up excercises and come back next month.

"I drank from a fire extinguisher yesterday."

"And how do you feel?"

"Very much put out."

HE WAS FREE

He was always late in reporting at the fire station. The breach of rules was reported to the head of the department and a request made that the fireman report to the office.

When the fireman arrived, the chief was in conference with the mayor. However, his attractive stenographer, who was previously instructed by the chief, did the interviewing.

"Are you doing anything tomorrow night?" she asked.

"Why no," replied the bashful fireman with some anticipation of her company that night.

"That's fine," said the girl. "In that case, the chief asked me to tell you to be sure to report at the station on time."

END OF THE TALE

In a suburban fire station there was a silly little dog. He was so silly that he would rush out of the station and across the street to bark at a monument. Now this dog had a friend who showed him how silly it was to bark at a monument when he could easily bark at the fire apparatus.

So one day when the apparatus rolled out, the silly dog rushed out in front and stopped and barked at the machine. And that's the end of the tale.

ICE DON'T BURN

The department at Waltham, Mass., was called to fight a fire in a home. The fire was started by lightning, and the tinder like walls of the old home were soon a mass of flames.

After the fire had been extinguished, the refrigerator was found intact after the flames had beat on its metal sheeted walls for more than an hour. The ice was still inside and even the butter was found firm and hard.

PROPOSED IMPROVEMENTS

Waterloo, Black Hawk Co., Iowa.—Chief Ray Tiller, Fire Dept., requested that City Council purchase a new pumper at cost of $12,500.

Rock Hall, Kent Co., Md.—New fire company to be organized here, according to reports.

Fordson, Monroe Co., Mich.—Council authorized the purchase of a new piece of apparatus for the fire department at cost of $12,800.

Audubon, Camden Co., N. J.—The sum of $20,000 was appropriated for the purchase of two additional pieces of apparatus for the fire department here. C. E. Hull, Chief.

East Liverpool, Ohio (Columbiana Co.)—Plans being made for issuing bonds to the amount of $40,000 for the erection of a combined fire station and city hall. Thos. Bryan, Chief of Fire Dept.

Apollo, Armstrong Co., Pa.—City Council purchased an Ahrens-Fox pumper for the fire department here.

Carbondale, Lackawanna Co., Pa.—Mitchell Hose Co. raising funds for the purchase of a hook and ladder truck.

Urbana, Champaign Co., Ill.—Fire department seeks aid of council in purchase of fire apparatus. No definite action taken by council.

Oakland City, Gibson Co., Ind.—The Oakland City Council has made known its intentions of purchasing a new fire truck. It is their intention to trade in the old truck.

Alexanderia, Madison Co., Ind.—George A. Rosenberger has been appointed as Chief of the Fire Department at a recent session of council.

Kingsley, Plymouth Co., Iowa—City Council at recent meeting authorized the purchase of a new fire truck.

Riga, Lenawee Co., Mich.—Farmers of section have organized the Rural Community Fire Protection Association and appointed nine directors who were authorized to purchase a fire truck at a cost of $4,500.

Sellersville, Bucks Co., Penn.—Erection of fire station to start at once. Harry E. Barndt is chairman of the Building Committee.

Tarentum, Allegheny Co., Pa.—According to reports Tarentum will soon purchase a new pumper. One of 1,000-gal. capacity is being urged by leading citizens.

Forest City, Rutherford Co., N. C.—Mayor Chas. Z. Flack favors the enlargement and improving of the local fire department.

Bernardsville, Somerset Co., N. J.—Department endeavoring to secure funds for purchase of apparatus to replace equipment deemed unfit for further use.

Lakewood, Chatauqua Co., N. Y.—Lakewood Chemical Company has purchased a hose and chemical truck from the Buffalo Fire Appliance Co.

North Little Rock, Pulaski Co., Ark.—Plans for building quarters for Fire Co. No. 2, have been discussed and resolutions authorizing selection of site for same adopted.

Onancock, Accomac Co., Va.—T. J. McJilton appeals to the Board of Supervisors of Accomac County for aid in purchase of fire apparatus for general use in the county.

Charleston, Kanawha Co., W. Va.—Chief Louis McLane is still endeavoring to secure two additional fire stations, as well as several new sirens, and a new fire alarm system.

Lind, Adams Co., Wash.—Council decides to purchase fire apparatus.

Watertown, Jefferson Co., Wis.—City council refuses to maintain fire fighting apparatus to be used in rural districts but, if the farmers purchase a truck and equipment, the council will grant permission to house same in the city hall.

Knoxville, Knox Co., Tenn.—Chief Boyd opposes erection of new fire station in City Hall Park, giving as his reason that this location would lessen the efficiency of the department.

Marysville, Cooke Co., Tex.—City to erect fire station. Address City Council.

Galveston, Tex.—An appropriation of $6,500 is to be included in the present budget for construction of a fire station in the grade rising area. F. J. Mellina is interested in the project.

Milford, New Haven Co., Conn.—Should citizens be successful in obtaining an appropriation for improvements of fire protection facilities, a sum of $16,000 will be included for the installation of a fire alarm system. L. F. Stowe, Chief of Fire Dept.

Astoria, Fulton Co., Ill.—Department in need of fire hose—no definite action taken.

Brandywine (Mail Glenloch) Chester Co., Pa.—An aerial ladder truck is to be purchased for the local fire department.

Ramsey, Bergen Co., N. J.—No definite action has been taken on purchase of fire truck which has been under discussion for some time.

udubon, Camden Co., N. J.—Borough Commission has rejected all bids received for purchase of two pieces of fire apparatus amounting to $20,000 and will readvertise. Mr. Zanger is a member of the Commission. C. H. Hull, Chief.

Port Jefferson, Suffolk Co., N. Y.—Bd. of Fire Commissioners award contract to Charles Langenegor for construction of fire station, cost not to exceed $61,000.

Crestline, Crawford Co., Ohio—City Council makes appropriation of $7,275 for fire truck. The new equipment is expected at an early date.

Ryan, Jefferson Co., Okla.—Special election called to consider appropriation of $15,000 for fire station and other public improvements.

Proposals for Fire Apparatus

CITY OF MALDEN, MASS.

Bids opened August 23, 1927.

Sealed proposals will be received by the Fire Commissioner of the City of Malden, Mass., at Headquarters, Malden Fire Department, Sprague Street, Malden, Mass., until 8 P. M., (daylight saving time), August 23, 1927, for a Motorized Triple Combination Pumping Engine, 750 gallons capacity.

Proposals must be endorsed "Proposals for Motorized Triple Combination Pumping Engine." Each bid shall be accompanied by complete and detailed specifications of the apparatus and equipment which it is proposed to furnish. Specifications will include Booster Tank.

The Fire Commissioner reserves the right to reject any and all proposals or to accept the proposal deemed best for the Fire Department of the City of Malden.

C. David Berg,
Fire Commissioner.

Dated: July 9, 1927.
8-10

Forest Fire Protection in East Bay Cities

(*Continued from page* 854)

amount of money has been expended on the project. The results are quite apparent today. It is doubtful if there is any one who has not seen the condition of the hills without the forest and now, would care to see the old condition return; yet there is always a chance that just such a condition may happen if proper precautions are not taken to guard these wooded sections from the three great destroyers of forests, namely, fire, disease and from destructive insects. Of the three, fire is the most destructive if not properly guarded against. It not only threatens the forest, but East Bay cities as well. The Berkeley, Cal., fire is a striking instance of the potential menace of any hill fire allowed to burn unchecked.

Steel Boxes Placed in Hills

From funds collected by the committee, steel boxes have been placed throughout the hills, each box containing tools for fire fighting purposes. The boxes contain shovels, rakes, hoes, axes, lanterns and water bags. This equipment is used for fire-fighting purposes only. Each box is labeled "California State Board of Forestry. In case of fire telephone Lakeside 5600."

Eighteen deputy fire wardens have been appointed the twenty-four stations established throughout the East Bay district and Contra Costa County for reporting hill fires. The deputy fire wardens take charge of all fires in their districts and have authority to requisition aid of any able bodied citizen between the ages of eighteen and fifty years to assist in putting out fires in any district outside of incorporated cities. Any person capable of performing such duties who refuses to comply is subject to arrest and fine.

Special Fire Apparatus Used

A special fire truck has been constructed and equipped with fire-fighting equipment and manned by eight men. This truck responds to all hill fires. Fire departments in all cities respond to grass fires within city limits. Arrangements have been made with the San Francisco-Sacremento Railroad to run special trains when men and equipment are to be carried to a fire.

During the season last year, due to the effective organization, but fifteen fires were reported from the Grizzly Park Station and extinguished at a cost of about fifty dollars. Any one of these fires might have gotten beyond control and started a conflagration that might have equalled or surpassed the Berkeley conflagration.

The importance of properly protecting the Contra Costa Hills forest area can not be overestimated as this forest area is the largest and best plantation of its kind in the state of California and its loss would be keenly felt by all of the East Bay community. And meanwhile, all those living in that area are urged to be careful about their housekeeping habits while in the woods nor to build fires in the hills.

Portland to Erect Fountain

With a view of honoring the men who lost their lives while in the service of the fire department and to honor David Campbell, fire chief who died at a fire on June 26, 1911, Portland, Ore., has invited bids for the construction of a beautiful memorial fountain estimated to cost $50,000.

The design for the fountain has been approved by the municipal art commission. They said that the memorial is the most beautiful of any that they have been called upon to consider.

The memorial will fill the triangle at Nineteenth and Washington streets, and in the foreground will be a flagstone terrace approaching the memorial. In the center will be a basin into which water will run and spill over into a pool. The memorial will be constructed from French limestone and stone benches will flank the structure with two bronze lanterns at the ends for illumination.

A number of trees and shrubs will be planted in the background to set off the work and at the extreme back will be a stone frame for the bronze bas relief of David Campbell in his fire-fighting uniform. The memorial will be sixty-eight feet long at the greatest dimension and thirty feet at the widest point.

The pool will be of sculptured tile in seaweed forms and there will be numerous bronze insignia of firemen about the memorial.

The bas relief is the work of Avard Fairbanks, professor of sculpture at the University of Oregon.

New Fire Alarm System for Battle Creek, Mich.—Work has been started on the new Gamewell fire alarm system fot Battle Creek, Mich.

Hawthorne, Cal., Organizes Department—An ordinance has been passed in Hawthorne, Cal., authorizing the organization of a fire department.

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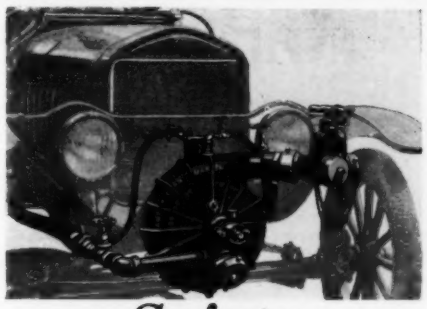

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"We paid for your pump more than three times over at its first fire", writes Vance F. Barker, fire chief of Vermontville, Mich.

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HOW BIG HYDRO-ELECTRIC PLANT IS PROTECTED AGAINST FIRE

Special Provision for Safety Made in Huge Power Development—Protection of Generator—Sub Station has Hose and Hydrant Installation

SPECIAL provision is made by the Pacific Gas & Electric Company in the protection of its property against fire. An example of this complete protection is found at the new Melones, Cal., hydro electric power plant as shown in the accompanying illustrations. Fig. 1 shows one of the fire stations mounted on a column in the generator room, consisting of a chemical extinguisher and a Pyrene extinguisher. These stations are arranged throughout the power plant at strategic points for quick grabbing in case of fire. Fig. 2 is a close up of one of the stations.

At the right of Fig. 3 can be seen the water supply to the fire extinguisher mainfold located at the top and bottom of armature of generator and connected to the station water supply pressure tank (which is located on the hillside above the power plant). In case the operator is sure that the generator is on fire, he closes the three way valve and opens the gate valve, which admits water to the distributing pipe in the generator.

Fig. 4 shows the elaborate system of fire hydrants and fire hose at the Contra Costa substation of the Pacific Gas & Electric Company. Between each cottage there has been placed a fire hydrant, which is protected by a small house painted red. A long fire hose is placed in each house and these are so arranged

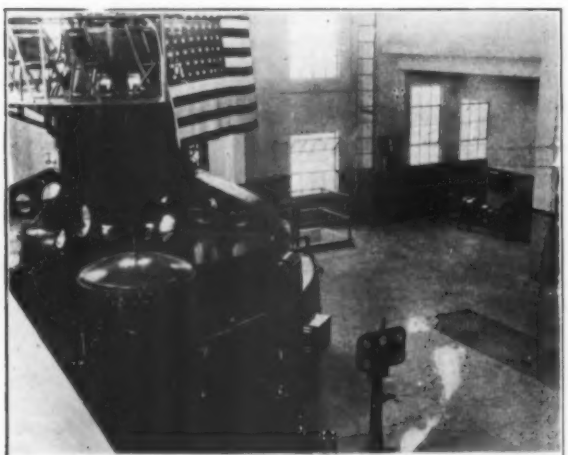

Fig. 1 (Upper). Fire Station Mounted On Column in Generator Room of Pacific Gas & Electric Co. Fig. 2 (Lower). Close-up of Fire Station

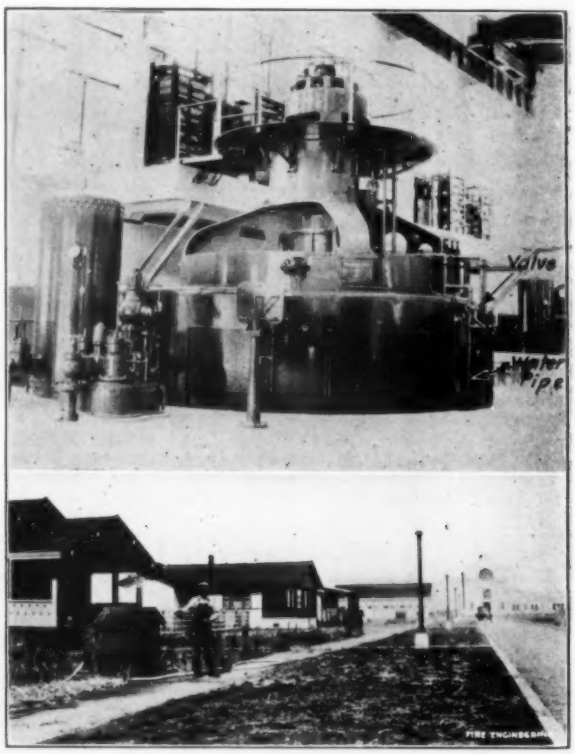

Fig. 3 (Upper). Generator of Pacific Gas & Electric Co., With Fire Extinguisher Manifold. At Right of Picture, Arrows Point to Valve and Pipe of Water Supply to This Manifold. Fig. 4 (Lower). Hydrants and Fire Hose at Contra Costa Sub-station of Company

that two fire hose can be used to play on each cottage. An elaborate fire-fighting system is installed in the sub-station consisting of a large chemical wagon and numerous chemical extinguishers in each department.

C. W. GEIGER.

Connecticut Firemen to Meet in West Haven

The Forty-fourth annual convention of the Connecticut State Firemen's Association will be held in the Cameo theatre, Campbell avenue, West Haven, Conn., on Friday and Saturday, August 19-20. The executive committee will meet at 11 a. m., on Friday, August 19, and at 2 p. m. the convention will be called to order.

Several important matters will be taken up at this year's meeting and firemen from every city and town in Connecticut will be on hand. A gala field day will be held at Savin Rock Amusement Park on Saturday afternoon, following a parade of fire apparatus.

The officers of the Connecticut State Firemen's Association are President, Captain Edward Foley, Bridgeport; Vice-President, Lieut. James McCoy, Waterbury; Secretary, D. W. Harford, South Norwalk; Treasurer, Assistant Chief M. T. Souney, New Britain.

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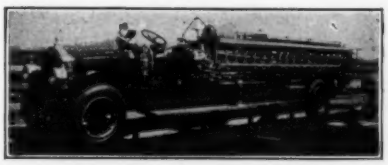

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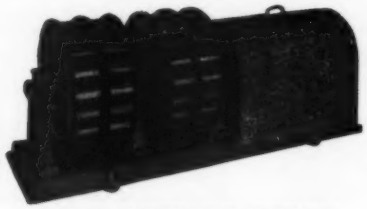

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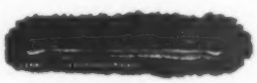

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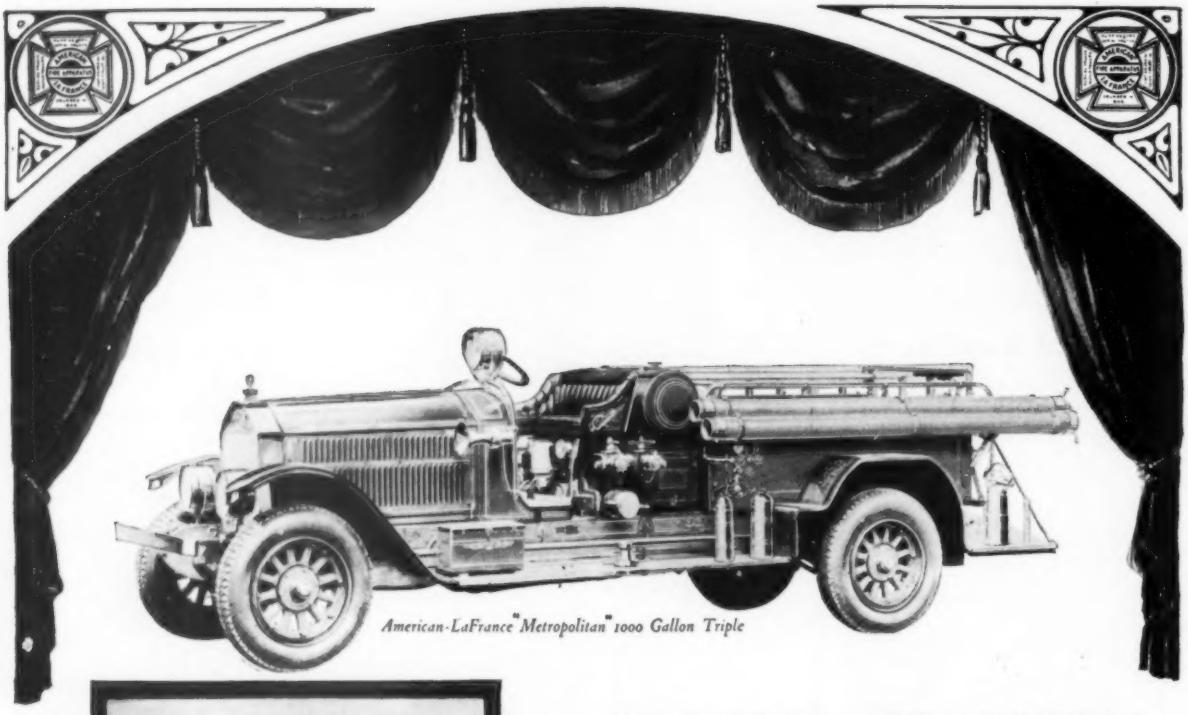

American-LaFrance "Metropolitan" 1000 Gallon Triple

American-LaFrance Wins Gold Medal

AT Philadelphia's Sesqui-Centennial International Exposition celebrating one hundred and fifty years of American independence, the Jury of Awards conferred a Gold Medal upon the American-LaFrance Fire Engine Co., Inc., for motor-driven fire apparatus and fire extinguishing equipment.

Once again the manufacturing principles followed through eighty-two years of successful experience have been recognized for their soundness. Again it has been shown that the name—AMERICAN-LAFRANCE—signifies the world's standard for fire apparatus.

It is undisputed quality that has placed American-LaFrance apparatus in the vast majority of American fire departments.

AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

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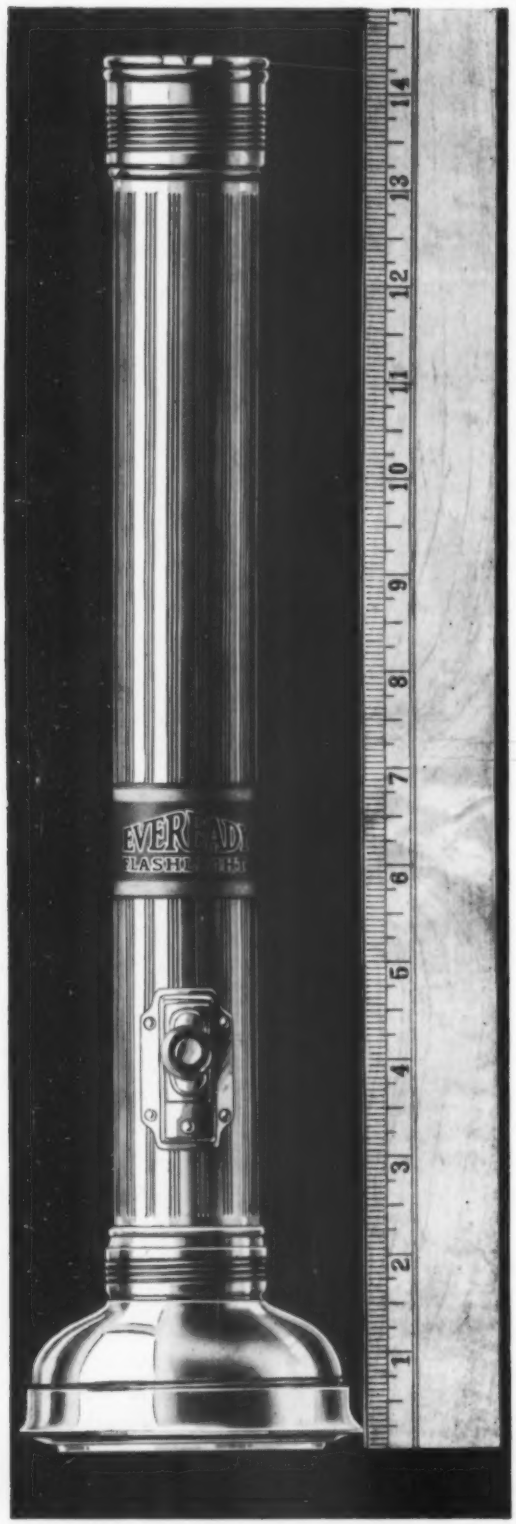

"IT IS an ideal light for officers and equally valuable for men making inspections. The importance of having a hand light on the person of all officers and firemen needs no explanation as to its value when rendering fire duty at night, or in dark places. Many a fireman's life has been saved by having a handy light for emergency work. Many lives have been saved by preventing firemen from falling into open trap-doors, falling from floor to floor, into openings of cellars, running off roofs and into courtyards, alleys, etc., on dark nights. . . . A ring on the end of this light is also very handy, for the light can be snapped on one of the coat buttons or on the lifebelt and carried without inconvenience to the officers."

This extract is from a statement by former Deputy Chief George J. Kuss, who served in the High Value District of the New York Fire Department. Mr. Kuss is a nationally known authority on fire appliances.

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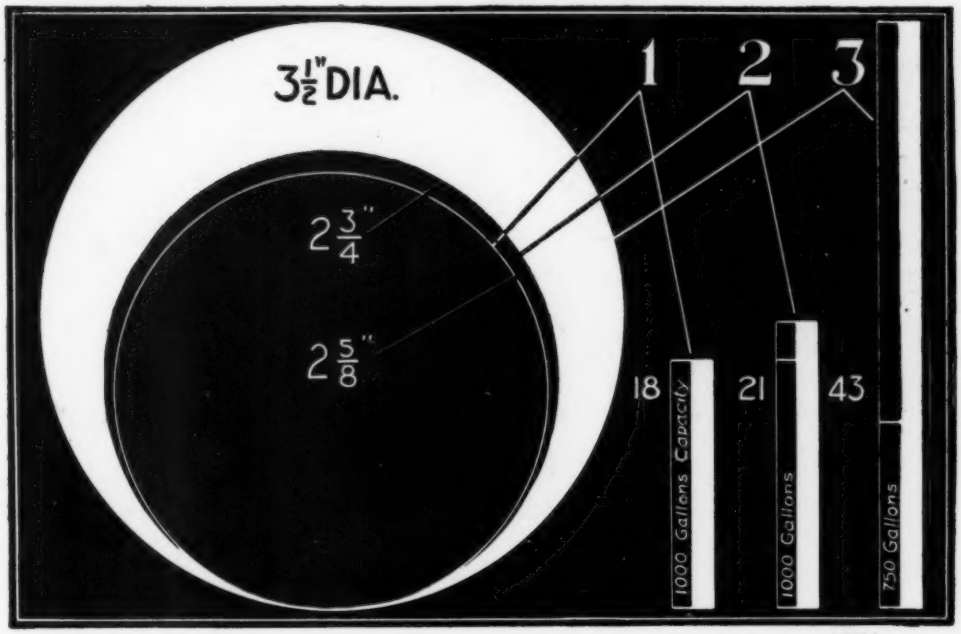
Blackboard Talk on Crankshaft Sizes, Showing Full Size Sections



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Consider the Crankshaft

Do you know what is the most common weakness in fire pumpers or what has caused over 60 per cent of failures of pumpers while in action? An engineering committee recently made such an investigation for a large municipality and reported that the failures were due to weak crankshafts. Do you know that Waukesha "Ricardo Head" fire pumper engines have a crankshaft that is 273 per cent stronger in proportion to its capacity than two well known pumpers and 316 per cent stronger than another.

Pick the three best known fire pumpers and you will find their crankshaft diameters are 2⅝ and 2¾ inches, while the Waukesha crankshaft is 3½ inches. The other three are of 1000-gallon capacity, while Waukesha is used for 750. In the above diagram the relative stiffness of the shafts is shown by the white lines which indicate the relative strength factors 18-21-43. If shaft No. 1, with a 1000-gallon capacity is satisfactory, then No. 2 has an excess capacity of 15 per cent and the Waukesha shaft, as shown by No. 3, has 216 per cent over capacity. It's such safety factors that have made Waukesha engines so acceptable to fire department officials who know good engine design. Write for Bulletin No. 592.

D-744-L

FIRE EQUIPMENT DIVISION

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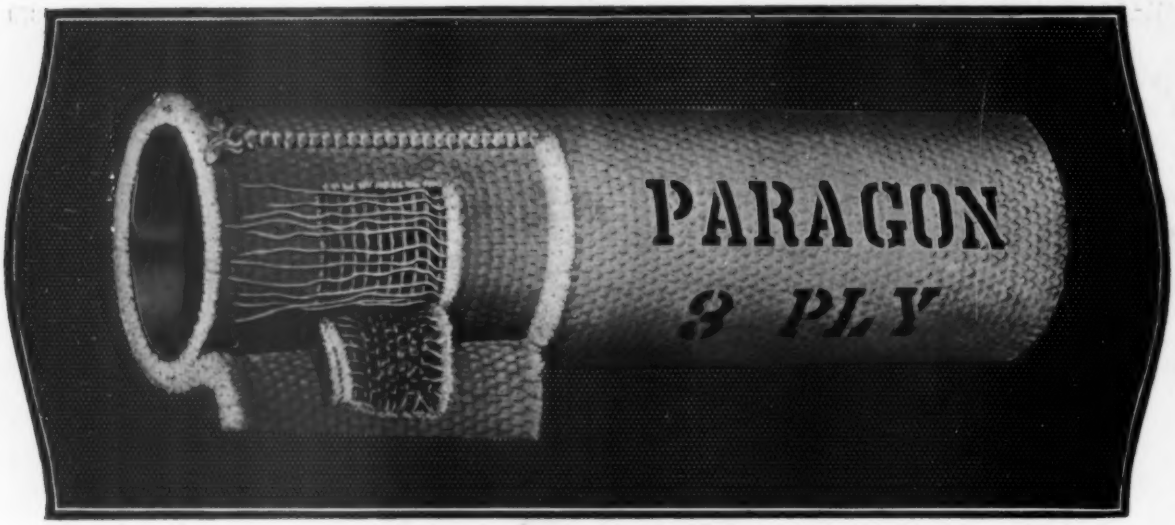

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